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GENERAL PSYCHOLOGY



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GENERAL PSYCHOLOGY

From the Personalistic Standpoint

By

WILLIAM STERN

Duke University

Translated By

HOWARD DAVIS SPOERL

American International College

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UVA
MARGUERITE
MATILDA DOAM

To the Memory of my Friends

Otto Lipmann

and

Martha Muchow

FROM THE PREFACE TO THE GERMAN EDITION

No science can progress without projecting from time to time a total picture of its field, including methods and data, points of view and theories. Present-day psychology urgently requires a synoptic view of this sort, considering the chaotic outcome of specialization and divergence in the psychological work of a generation. We have had many distinctive psychologies: elementaristic psychology and Gestalt psychology, *verstehende* psychology and analyzing psychology; topological and operationalistic psychology, purposive and mechanistic psychology; psychologies of the unconscious, of consciousness, of behavior, etc.—but no inclusive *general* psychology.

It is the function of the present book to give a new foundation to the *general psychology of the human individual*. The word “general” is here used in a double sense. It opposes one-sided treatments by doing justice to the varied methodological and theoretical approaches to psychological knowledge; and it deals with the *general* aspects, functions, and laws of human mental life in contrast to differential psychological treatment of the peculiarities of types, phases, sexes, races, and individuality.

It goes without saying that the book is based upon authentic modern psychological research. Such work cannot always be reviewed in detail since the book was not conceived as a compendium but as a new foundation for scientific psychology. Nevertheless, every chapter, even every detail of treatment, takes account directly or indirectly of the development of our science. Psychology is now firmly established and impresses its positive importance upon all who come in contact with it. It is a growing collective enterprise giving scope to all who have any contribution to make. Even in those places where our book criticizes or rejects certain points of view, theories, and methods of modern psychology, its indebtedness to the labors of psychology must be acknowledged.

In spite of this basic concern with the whole fabric of psychological specialties, our book will maintain a thoroughly distinctive and novel point of view, diverging from that of traditional psychology. This is the *personalistic* point of view, which here finds its first occasion to demonstrate its fitness to formulate and interpret a particular empirical science. We define psychology as “the science of the person having experience or capable of having experience.” The immediate subject-matter of psychology, *experience*, is therefore to

be identified and interpreted in terms of its matrix, the unitary, goal-directed person. It will become evident that the personalistic hypothesis does not exclude other theories and points of view (except the purely mechanistic), but bears a constructive relationship to them; and although it is homogeneous, one-sidedness is avoided.

Psychology has changed completely since the close of the nineteenth century. This gives rise to a danger that divergence from the views of that period may also neglect the valuable suggestions for which we are indebted to it. It is the manifest duty of an older psychologist who started out under the direct stimulation of that epoch, to seek to preserve continuity and to lead what was vital in it into the channel of progressive development. As this book will demonstrate, this is of course possible only if the older discoveries are placed in new contexts, and if their significance is in part reinterpreted.

The material treated is arranged in six parts. Part One serves wholly as an introduction and is therefore limited to an outline. In the first three chapters a general orientation is given concerning recent and present positions in psychology; the fourth chapter is devoted to the presentation of the personalistic theory, which is foundational to all further special considerations.

The person-world relationship provides the plan for our treatment of the special mental functions. The exposition begins with those areas of mind in which the dependence of the person upon his world is greatest. The tie that binds him to the world situation in the immediate *present* reduces, in terms of experience, to *perception* (Part Two); dependence on *past* states of the world, to *memory* (Part Three). Still other mental functions are characterized by a greater independence of the person as compared with the world. This is manifested in his altered time-relations. The content and course of experience are here determined not by the urgent pressure of the present nor yet by the fixity of the past, but by the ambiguous future or by a temporally indifferent, "super-temporal" region. Thus *thinking* points toward future ends; *imagination* moves in freedom from time, and may point forward or backward, or lack direction. Thought and imagination (Part Four) do not infringe upon the state of the real world; they consequently occupy an intermediate position in the process of emancipation. The highest forms of this emancipation are represented by *volition* (Part Five), where the person tends spontaneously to influence the world; and by *feeling* (Part Six), where he withdraws from the world into himself and his experience. Volition is explicitly directed toward the future. Feeling may occur in all temporal modes; there are feeling-experiences that pertain to present, past, and future, and that are temporally indifferent.

Let it be emphasized that the processes of mind, delimited in this way, must in no sense be regarded as separate mental faculties or compartments; they are simply the various ways in which the experiencing person orients his relation to the world. A formal advantage of the sequence adopted may be seen in its resemblance to the classification commonly used in general psychology. The transition to the new *theoretical* principles required by personalistic psychology will perhaps be rendered somewhat easier by the fact that our organization of the material does not impose demands of a too unfamiliar sort.

PREFACE TO THE ENGLISH TRANSLATION

It is a matter of great satisfaction to me to see an English translation of this book completed. Through it I am able to approach the scholars and students of my new homeland directly, and to add a new psychological doctrine to those already known to the English-speaking world. The reception given the original edition by some representatives of American science raises the hope that the English form of the book may strike a sympathetic note.

I am deeply indebted to Dr. Howard Davis Spoerl, whose psychological facility, linguistic delicacy, and indefatigable endeavors contributed to achieve the difficult task of translation. Invaluable aid has been given by my friend Dr. Gordon W. Allport, who carefully read the entire manuscript and furnished much substantial advice. I am also grateful to the staff of the Department of Psychology at Duke University for its help in fixing the English expressions for many German terms.

In translation the text has been revised to meet the requirements of English and American readers. Considerable changes have been made, although these do not affect the substance. In general, they consist of shortenings; there are, however, a few additions resulting from new impressions I have received in this country.

The plan and scope of the bibliography have been considerably altered. The original bibliography, compiled with the careful help of my former assistant, Dr. Betty Katzenstein, now of São Paulo, here appears in six sections appended to the six parts of the book. Many references to more obscure or less essential publications have been eliminated; other items of greater importance to new readers have been added. Foreign books existing in English translation are listed by the English titles, place and date of publication of the latest (or most noted) original edition being added in parentheses.

WILLIAM STERN

DURHAM, NORTH CAROLINA,
December, 1937.

TRANSLATOR'S PREFACE

The happy medium of translation lies somewhere between that literalness which amounts to obscurity and that degree of departure from the original which engenders distortion. In striving to achieve it I have used as a guiding principle the avoidance of technicality in so far as this was consistent with the demands of the original text. Nevertheless, the special usage of certain basic terms should be called to the reader's attention. In particular, the word "experience" is nearly always to be given the intimate emphasis of the verb "to experience." Other terms are adequately defined at appropriate places. As far as possible, terms already translated by others (e.g., Lewin's "valence") have been retained in such translation, in the interests of a standard psychological vocabulary. In a few instances new translations were made of quotations from German authors.

I wish to acknowledge the kind permission of The Duke University Press to reprint that portion of Chapter XXIII which has appeared in *Character and Personality*. This material has been revised for present publication.

No less than Professor Stern I am under obligation to Professor Gordon W. Allport for his encouragement, patient labor, and helpful assistance with many features of our project. I am also indebted to my wife, Dorothy Tilden Spoerl, for assistance in reading proof and preparing the manuscript.

HOWARD DAVIS SPOERL

SPRINGFIELD, MASSACHUSETTS,
December, 1937.

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PART ONE
OUTLINE

CHAPTER I

GENERAL PSYCHOLOGY

I. "PSYCHOLOGY" IN THE BROADEST SENSE

The subject of this book is scientific psychology. This statement contains the presumption that there must be other kinds of psychology than scientific psychology. Such indeed is the case.

Judges are often called good psychologists, poets great *connoisseurs* of minds; we may speak of the psychology of the Oedipus legend; and in all such instances "psychology" is used in a broad sense. It might be defined as *the sum total of convictions, knowledge, and modes of conduct having reference to the mind in its essential nature and its activity.*

I. TABULAR VIEW

It will be necessary briefly to examine psychology in its broadest sense in order to assign a proper location to *scientific* psychology, with which alone we shall later be concerned. A tabular view formed by the intersection of two dimensions may serve us to this end.

The twofold description employed above of the *subject-matter* of psychology as a whole, "mind in its essential nature and activity," furnishes the basic dimension. We may concern ourselves with mind as we meet it in our practical understanding of life, and also with that hypothetical being that underlies experience of this sort, makes it possible, and gives it meaning. Here we have the well known contrast between the *empirical* and the *metaphysical* views.

Within psychology experience and metaphysics are not, of course, entirely separable: the search for ultimates has frequently favored problems about the mind, and experience has often been classified and interpreted according to metaphysical principles. On this account we may say that psychology is predominantly but not exclusively either metaphysical or empirical.

The other dimension embodies the attitudes taken toward the whole subject-matter of psychology. One's attitude may be *naïve*, *artistic*, or *scientific*. Naïve psychology provides a general and indispensable foundation; the other two attitudes result in complex treatments, neither of which can be said to be clearly superior to the other.

Naïve psychology is based on opinions and beliefs, artistic psychology on intuition and portrayal, scientific psychology on investigation and reflection. Six principal kinds of psychology result from the intersection of the two dimensions, as the tabular view indicates.

TABULAR VIEW

		<i>Subject-Matter of Psychology</i>	
<i>Attitude</i>	a. ESSENTIAL NATURE OF ~ MIND (Metaphysical Psychol- ogy)		b. ACTIVITY OF MIND (Empirical Psychology)
	1. NAÏVE	1a. Mythological & Reli- gious Comprehension of Mind	1b. Intuitive Knowledge of People
	2. ARTISTIC	2a. Artistic Animatizing of the World and Ob- jects	2b. Artistic Interpretation and Portrayal of Mind
	3. SCIENTIFIC	3a. Philosophical Psychol- ogy	3b. Psychology as Empirical Science

2. NAÏVE AND ARTISTIC PSYCHOLOGY

It is a characteristic of the *naïve* individual in all ages and among all peoples that his opinions, which rest upon unclarified experience, and his beliefs, which aim at ultimate principles, are still inseparably intermingled.

1a. The general ideas that he forms of the *nature* of the soul, of its substance, its value, its seat, its power, its immortality, go to make up the most important ingredients of *all myths and religions*, persistent superstitions, and magical thinking. They exist alike in primitive animistic cults and in modern spiritistic *séances*. Everywhere the conviction prevails, undisturbed by all criticism, that the truth of such dogmas may be corroborated by empirical data.

1b. A second kind of naïve psychology arises from the immediate urgency of every day-life and from practical relations between people, and this we may describe as *intuitive knowledge of people*. It is forever seeking differences; the mental *individuality* of a person or group is intuitively apprehended and treated. Everybody has need of this

kind of understanding, and everybody possesses it to some degree. It is largely independent of one's cultural level, educational standing, and professional knowledge of psychology. Sometimes it grows out of the intimacy of one's relations to certain persons, as in the clairvoyance frequently shown by a mother for the mental trend of her child even though she may otherwise be a poor judge of people. In other cases this discernment seems to be a special gift; political leaders, educators, ministers, physicians, judges, even tribal chiefs and medicine men among primitives often prove to be "born psychologists" in their understanding of individuals as well as in their management of crowds. Such development of the natural knowledge of men is of course rare. With most people this ability to comprehend the activity of other minds is wretchedly developed; their use of it ordinarily takes place without self-criticism and is subject to error. Still less developed is that form of intuitive psychological insight which concerns one's own self: so called "self-knowledge."

Whenever naïve psychology rises to the level of creative expression, and this is possible only in certain outstanding individuals, we may speak of *artistic psychology*.

2a. *The artist's comprehension of the world* is closely akin to mythological comprehension, especially since the artist, like the animist, is incapable of conceiving of the universe as lifeless; he endows it with soul and life. These qualities he *bestows* upon it, and herein he differs from the naïve myth-maker for whom the animation of the universe is likewise very real. To the artist who animates tree and rock, and expresses through his works the "atmosphere" of a landscape and the "striving" of natural forces, the "reality" of this animatism is not of immediate importance. That borderland between reality and appearance in which he is at home is dominated by images and symbols that point in a general way to mind regardless of its specific reality.

2b. *The artist's empirical psychology* is a penetrating *interpretation and well-rounded portrayal of mind*. Thus Shakespeare, Dostoevsky, Rembrandt, or Eleonora Duse were artistic psychologists of the highest rank, both in their native capacity to be affected by mental experiences and in their ability to make them objects of contemplation and appreciation. This amounts to projecting mental images into a representation which in its nature and deep import is again entirely independent of the relation to "reality."

The question occasionally asked as to whether these psychological fruits of artistic genius should be ranked above or below scientific psychology is idle; art and science are two manifestations of the same human spirit, and each in its own way can lead to unsurpassable heights of achievement. In no case may the scientific psychologist

thrust aside indifferently the artistic type of imagination and portrayal because they belong to a different region of life. He will often translate a poet's anticipatory vision into the language of his theories and contrive to elucidate it by means of his methods; and he will often find in the artist the most striking intuitive illustrations for the scientific propositions that he has worked out in another way.

Strange hybrids are also to be found, as in the case of Rousseau and Nietzsche, who were neither pure artists nor pure scientists, but who were evidently, through an unique fusion of artistic ability and the capacity for abstract thought, trail-blazers in psychological realms.

The *scientific* modes of treatment in psychology indicated by 3a and 3b in our tabular view now require more detailed discussion.

II. PHILOSOPHICAL PSYCHOLOGY

I. PREFATORY

Psychology today belongs to the large group of special sciences that have their own intrinsic problems, methods, products, and modes of application; but at the same time it retains connection with *philosophy*. This connection is primordial, for philosophy was the original common mother of all scientific thought. From it the special sciences detached themselves and gradually assumed independent existence. The attachment of psychology to philosophy was of long duration. The separation was announced as recently as the eighteenth century when the German philosopher of the Enlightenment, Christian Wolff, made the distinction between "rational" and "empirical" psychology. Psychology was really constituted as an independent science only in the second half of the nineteenth century.

Neither at that time nor at any other, however, was the connection of psychology with philosophy *abolished*; in recent years its strength has even increased. There is no doubt that commerce between philosophical contemplation and empirical procedure is inescapable. The conviction, still widely propagated at the present time, that psychology could or ought to become a separate discipline entirely alien to philosophy, threatens either to lead to an "unpsychological psychology" or to result in the *unconscious* laying down of metaphysical and epistemological hypotheses as the foundation for scientific work that is supposedly free from preconception.

2. SURVEY

In this survey we shall present an impartial account of the basic philosophical problems of psychology and an enumeration of the

principal attempts to solve them, without taking sides or arriving at decisions at this time.

a. *The essential nature of mind.* Here the question is: *What* is mind (or what is "mental")? From the point of view of "substantialism" (which is closest to the position of common sense and religion), the answer is this: The soul is an independent unity, self-existing and separable from the body. From the point of view of "elementarism": The mind is an aggregate of mental elements. From the "functional" point of view: The mind is a stream of mental processes and activities. From the point of view of the doctrine of "attributes": The mind is an attribute (mode of manifestation) of the substance.

b. The problem of the *scope of mind* is closely related to the preceding question. *Where* specifically are mind and mental data to be found? Only in human beings? Or also in lower animals? Perhaps even in plants and inorganic forms ("souls" of crystals and atoms)? In the same way it may be asked on a level above that of human individuality: Have we any right to speak of the soul or spirit of a people; of group minds; of a collective will? Perhaps even of a metaphysical soul of humanity, or of planetary and universal souls?

Here, then, we have a scale of philosophical hypotheses, ranging from an extension of mind that is still in dispute among cautious investigators (animal mind, group mind), to metaphysical speculations of a kind furthest removed from experience.

The following problems refer generally to the mind of the individual.

c. *The constitution of mind.* The question here is: What is the mind *like*? There is a fundamental division of points of view between that of pure "consciousness"—the essential, never-lacking characteristic of mind is consciousness—and that of the philosophy of the "Unconscious," which accepts as mental that which remains hidden to the very person in whom these "mental" events occur.

In regard to introspective qualities of the mind, the "doctrine of faculties" sets up a limited number of separate, autonomous powers (e.g., thinking, feeling, willing). In opposition to this doctrine the philosophical tendency toward unity attempts in various ways to demonstrate some one basic quality of mind to which all other qualities may be reduced. Thus there is an "intellectualistic" psychology of ideas, a "voluntaristic" psychology ("everything mental is an act of will"), a "sensationalistic" psychology of sensation, a psychology of instinct, an "emotionalistic" psychology of feeling, etc. All these standpoints prove to be right in emphasizing the importance of certain phenomena; they are wrong in singling out one class of phenomenon as the primordial source of all the rest.

d. *The relation between mind and body.* The opposing of these two concepts is the expression of a highly specialized philosophical dogma; this dogma became so deeply rooted during the developments of the past

three centuries, since Descartes, that for many thinkers it is even now the indispensable point of departure for all psychological reflections.

The separation of the concepts is sharpest under the theory of "dualism of substance." According to this doctrine body and mind are two entirely unlike and separate entities (substances), either having nothing whatever to do with each other or engaging merely in external interaction.

Even the current "monism" does not get rid of the antithesis between the concepts body and mind. These are, to be sure, no longer regarded as independent substances, but simply as two *attributes* of a unitary being. But as attributes they are sharply contrasted, and are without any transitional or internal connection; and their parallel existence constitutes the sole characteristic of the single substance of which they are attributes ("parallelism").

Furthermore monism tends not even to concede the equality of rank of the two attributes, but to absorb human existence entirely into one or the other of them. The result is either *materialism*: all being is material, mind is only a function of matter—or *spiritualism*: only minds and their conscious contents exist; even matter and consequently one's own body, exist only as ideas in the mind.

In contrast to these older theories a new understanding is beginning to develop according to which the basic antithesis between the concepts body and mind is denied. For these two concepts do not constitute the ultimate categories, the interrelation of which would explain the world and man. The newer concept "person" that is now growing in favor is *prior* to the antithesis. It is "psychophysically neutral." (This "personalistic" point of view will be treated in detail in the fourth chapter of our book.)

e. *The destiny of mind.* Here the concern is with the origin and future of mind; its place and mission in the world. By "world" is meant the sum total of everything that is not mind; the body, things, civilization, other individuals, groups, the cosmos, divinity. Various classical disputes arise in this connection, e.g., the rôle of heredity and environment in the formation of mind, the relation of freedom and determinism, character and conduct, the intelligibility or unreasonableness of being, death and immortality. These philosophical problems are, again, in close contact with those enigmas of life and meaningful interpretations of human nature which belong outside of pure science.

As contrasted with the topics discussed thus far, which were not created by philosophy but were simply made systematic on an intellectual level, other problems have been developed by philosophy that are peculiar to it alone. They embrace the possibility and validity of psychological knowledge in general, and consequently the scope of psychology as a science. They are not metaphysical but concern *epistemology* and *theory of science*.

Under epistemology falls the inquiry as to what are the mental implements with which man carries on psychology. There are various alter-

natives. It may be asked whether some specifically "psychological" experience must be contrasted, as inner experience, with external experience; whether one has a right to transcend experience by speculation, hypothesis and interpretation; how the methods of explanation and understanding are apportioned in the treatment of psychological data; whether universality, necessity, timelessness belong to psychological insight; how single psychological categories (e.g., consciousness, faculty, type, individuality) may be logically constructed.

Investigations in the theory of science necessarily exceed the limits of psychology as such, for the *place of psychology within science* must be clarified, especially its position between science and the humanities, and finally its relation to fields akin to it, such as biology, biography, etc.

The above survey is not intended to be in any way complete. Its purpose is simply to illustrate the proposition that *philosophical problems of psychology* do not constitute an isolated province with which empirical psychology need have no concern. On the contrary these problems penetrate the tissue of the empirical science of mental life, reducing its findings to order and system, sense and meaning. On the other hand, as special researches advance they impose upon philosophical psychology limitations, concrete demands, and controls that protect it from the confusion that formerly characterized speculative, unrealistic psychology.

III. PSYCHOLOGY AS EMPIRICAL SCIENCE

I. PREFATORY

For every one of us mind is constantly an object of empirical statements. Such naïve items of knowledge are reduced to an empirical *science* whenever (1) their *acquisition* in specific fields is made an independent aim of thought, and (2) their *treatment* conforms to methodical and critical points of view.

Considering the short period during which psychology has been such an empirical science, it is easy to understand why it has not yet been able to attain full internal stability and external trustworthiness. Psychology is incomplete in many respects and its progress must be won through conflicts and crises. Nevertheless its achievements, within the last few decades, are extraordinarily impressive. The picture that we now have of the human mind is incomparably richer than the inadequate scheme of Hume's or Herbart's days, and it is different in its profundity and relief, with hidden backgrounds, none of which was formerly suspected. Moreover, the abstract diagram of the human mind has been metamorphosed into an array of pictures of various mental types and mental stages. At the same time we are today organizing a system of conceptual categories with which we are able to control data about the mind. But beyond its body

of theory and categories of knowledge, present day empirical psychology is profiting by two advantages. It affords all who are professionally concerned with the minds of others a deepened *interest* in mind, and it sanctions a profusion of very comprehensive *applications* to many fields of cultural and practical activity.

Let us attempt a brief survey of the work of professional psychologists today. We shall first of all limit ourselves to what is often called "pure" or *general* psychology, returning later to sketch in its collateral branches and fields of application.

We have previously made a distinction between the *acquisition* and the *treatment* of psychological data as the two fundamental procedures of empirical psychology. The difference may be illustrated by an example.

A psychologist collects dreams by recording his own dreams, by having those of others reported to him, or by bringing together accounts of dreams in the literature (acquisition of data). Another psychologist selects from this material such dreams as appear to be clear-cut or disguised wish-dreams, and analyzes and interprets them with the aid of definite—perhaps psychoanalytical—theories (treatment of data).

In actual psychological work this distinction between acquisition and treatment of data is of course often lost. For no collection of material is ever entirely unselected and impersonal, but is influenced by guiding trends, which change (thereby involving *treatment*) the chaos of impressions into psychological knowledge. And each elaboration discloses new psychological data in the raw material being treated. Thus we may speak only of the one or the other procedure, as being more or less in evidence, and apportion them according to our purpose.

2. AIMS

a. *Description.* *Descriptive* psychology is primarily concerned with the *acquisition* of data. Its aim is to represent mental events by succinct statements intelligible to others.

This in itself is a thoroughly scientific aim. A hiker on an outing would scarcely be in a position even to describe the flora of the hills through which he traveled. Similarly imperfect would be the performance of a non-psychologist who wished to describe the processes of ideation and feeling present in him during the course of an emotion that had just subsided, or to record the complete mental life of a child during a lengthy period of play. Thus even mere description demands scientific exactitude. Descriptive psychology is necessary at the outset for amplifying the phenomena which for the layman usually dwindle to a few striking items, and for revealing their finer shadings. It is also needed for preventing valuable psychological material from being *falsified* through too hasty interpretation by analogy with one's

own mental life or by some preconceived theory. For example, the testimony of many explorers and missionaries concerning primitive peoples and their mental life is worth little for psychological purposes simply because this material has been communicated with the naïve bias of civilized Europeans.

Description deals not only with single mental events such as occur in definite individuals in definite situations. There is also a kind of description that deals with the essential core of mental data; this *phenomenological description*, derived from philosophy (Husserl, Scheler, Heidegger, and others), has affected psychology in recent years to a considerable extent. It is possible to speak of the "phenomenology of the consciousness of space," "the phenomenology of intentions," etc.

b. *Classification and terminology.* Once acquired by description, the material must be classified; conversely it is only through classification with its attendant clarification of terms that further description is made possible.

Terminology is of especial importance in our science because much of its discourse is in every day language. Scientific psychology here enters into a twofold relationship with naïve psychology. On the one hand it must do away with the vagueness and inaccuracy of lay usage in language so that the words may recover a fixed signification. Expressions like "consciousness," "feeling," "sensation," "ability," "character," among others, must receive exact definitions in order to become profitable to science. On the other hand the unconscious creative power of popular speech has coined imaginative expressions and pertinent figures that are remarkably accurate in describing mental states, and psychology must not neglect to use these.

The very act of creating psychological classifications and definitions makes for a certain *arbitrary* treatment of the subject-matter and even distorts it.

For instance, we mentioned above the old threefold division of mental activity into *thinking, feeling, willing*. The bringing of everything of the mind under these three rubrics and the delineating of sharp boundaries between them requires an arbitrary isolation and a simplification that do not represent the fluidity and the varying significance of mental events.

Here we are confronted by an essential paradox of all psychological work. As soon as we name anything and thus assign it to some definite psychological category, it is no longer the same thing that it was before; it acquires a peculiar rigidity and fixity that cannot be ascribed to mind itself.¹

¹ This paradox has been recognized by artistic interpreters of mind. "Let the mind speak, and alas! it is no longer the *mind* that speaks"—Schiller. "What subjects, then, do we transcribe and paint, we mandarins with Chinese brushes, we perpetuators of things? Alas! forever only that which is just about to wither and is beginning to lose its perfume! Only spent and departing storms and faded lingering feelings . . ."—Nietzsche.

Scientific psychology must attempt to lessen this deficiency, which cannot be completely overcome. The rigidity of classification may be modified through easier and richer constructions and through shifts in definition. Placing one and the same mental phenomenon in varied perspectives is one attempt to get at its diverse meaning; by cultivating a language that grows continually richer in shadings, by creating transitional concepts (e.g., "foreconscious," "synaesthesia," "ambivalence," "tonal brightness," "eidetic image," "serious play"—*Ernstspiel*) that which seemed inexpressible is given increasingly appropriate forms. How clumsy the arbitrary threefold division into "thinking, feeling, willing" seems to us today in contrast with the supple constructions we now employ to obtain both hybrids and blendings! A much richer and more refined terminology is now at our disposal when we attempt to describe an individual.

Despite progress of this sort the danger is great that we may succumb to the enticements of over-simplified classification.

In past centuries, for example, the well known quartet of temperaments was taken as an indubitable principle of classification. Today we find a similar situation in modern type doctrines; sometimes two, sometimes four, sometimes six types are sharply contrasted, and it is believed possible to comprehend people adequately by assigning them to one or another type. Or there is the case in which a separation between "spirit" and "mind" is sharply drawn within the individual.¹

c. *Analysis and totality.* Mental phenomena are *complex* as they confront us in bare description, that is, every such unity comprises variety. From this fact arises the scientific procedure of "analysis," the extrication of the constituent parts of the complex.

Let us take as an example the bald mental experience that I express by the words "I want to eat now." Analysis discloses an indefinitely localized visceral feeling of hunger, a need growing out of it, the diverting of attention from previous activities, the more or less vivid image of food, the remembrance of former occasions of eating, the idea, colored by feeling, of the satisfaction anticipated, a voluntary impulse to execute certain movements, and perhaps an alternating deliberation that ends in decision and an act of choosing.

Another example of psychological analysis: The layman speaks of musical ability as if this were a simple quality that required no further analysis. The psychologist cannot be satisfied with that and must attempt to analyze. Within this talent he finds a large number of component abilities, such as sensitivity of hearing for the purity and differences of tones, memory for tones and melodies, aptitudes for rhythm and harmony, understanding for musical contexts, affective excitability, ability to reproduce, and ability to create new musical compositions.

¹ Cf. Klages, *Der Geist als Widersacher der Seele*.

It is perhaps necessary to emphasize the fact that psychological analysis is involved in *every* area of scientific psychology, and is not peculiar to that movement which has taken "analysis" as part of its name. *Psychoanalysis* is merely a certain *kind* of analytical procedure of which we shall speak later.

The progress made by psychologists in the technique of analysis advanced as it was by various special methods (e.g., the experimental method) had effects similar in part to those brought about in natural science by the microscope; what appeared to be simple was perpetually resolved into an aggregate of still simpler constituent parts until it was believed that mental "elements" had finally been unearthed.

But just at this point a highly questionable conception was precipitated into psychology. The search for elements in imitation of the natural sciences led to what is called *elementaristic psychology*. This point of view, which has been attacked by modern psychology, may be briefly characterized at this juncture.

"Elements" are simple, ultimate, self-contained parts. If it be admitted that the mind is composed of elements, two questions must be asked: (1) How are the elements constituted? (2) How are they bound together? The attempt to answer these questions was likewise in imitation of the natural sciences, and the model was the "exact" rather than the *organic* natural sciences.

1st. The assumption of elements of mind nearly always led to their being taken as *of the same kind* (corresponding somewhat to protons or electrons in physics). Every difference in kind of the qualities discovered by analysis was then conceived to be a sign that the real goal of analysis had not yet been reached; for the human desire for unity demands that there be only *one* kind of element, and that all variety result only from the manner in which such elements are combined.

It will be perceived how profound a part philosophical hypotheses play in this fundamental conception of elementaristic psychology. Herbart's doctrine bears the best known impress of such uniformity in elementaristic psychology; it holds that all mental activity consists of "ideas" and that will and feeling are really relations of ideas.

2nd. It is a further characteristic of elementaristic psychology to seek to *explain solely by elements* everything that takes place in the mind. All mental phenomena are accordingly *aggregates* (mechanical structures) of elements and nothing else. Like ultimate parts of matter, mental elements are also regarded as carriers of elementary powers by which they influence each other; by attraction and repulsion, facilitation and inhibition; and they associate with one another to form series and complexes differing in scope, of which the mind or self is the most inclusive. Hume's proposition "the self is a bundle of ideas" was

the first, and remains today the classical expression for this conception of mind as an aggregate.

Elementaristic psychology is far removed from the realities of psychological *experience*; in fact, it forces experience into an wholly arbitrary system of assumptions. For neither simple elements nor purely mechanical structures are immediately given in our experience of mental activity. Nevertheless the importance of elementaristic psychological research for our empirical science is not to be valued lightly. The simplified working hypothesis, proceeding *as if* mental "elements" were related to one another within the individual, led to the seeking and to a considerable extent to the finding of *laws* or rather *rules* for such connections; and these have materially advanced our knowledge. It would therefore be entirely inadvisable to rule out of psychology the points of view and methods of investigation developed by the elementaristic attitude merely because its theoretical foundation is inadequate. On the contrary we must adopt many of the findings and procedures of that "exact" psychology for the new psychology—in a far more inclusive way, to be sure, and on the basis of *entirely different* theoretical assumptions.

The fundamental principle opposed to the concept of element throughout this new psychology is that of "wholeness," and the method that is succeeding analysis as its counterpart and needed complement is the method of "totalizing."

The numerous concepts of wholeness in various psychological theories cannot be developed here, but only the basic conception common to them all. According to this common conception anything mental either is itself a whole (i.e., a unity meaningful in itself that is more or less definitely bounded), or belongs to a whole. Wholeness does not exclude an internal multiplicity of constituent parts and members; these simply lose the character of independent elements capable of existing by and of themselves. Instead they become subordinate "aspects" of the whole and may be understood only in their relation to the "totality."

A single tone of a heard melody is not given to the mind as an elementary sensation of tone, but as the "tonic," the "leading tone," or the "acme," etc., within the pattern of melody. In a voluntary action the idea of the goal is not present in isolation but has a key position, conditioned by the entire act, in terms of its tensional relation to other motives and its function as impulse to the execution of a movement. An aptitude is not a summation of component qualities found in it by analysis. Thus in a musical person the capacities of memory for tones, keenness of hearing, emotional excitability, etc. (cf. the enumeration, p. 12) have no separate existence of their own, but are embedded in the total mental structure that we call "musicality" (being musical). And many other

mental qualities that appear to be widely distant from one another, like temperament, imagination, impulsiveness, intelligence, do not coexist separately as "faculties" but are simply closely related tendencies within the unitary "person."

In present-day psychology the concepts of wholeness are the categories "configuration," "structure," "pattern," "complex quality," "unity of consciousness" and others. The concept is not however limited to the purely mental in human beings, but is applied to the psychophysical unity of man in such terms as "constitution," "psychophysical neutrality," "person," etc. The methodological requirement that *scientific psychology always preserve the correlation between part and whole, salience and ground, analysis and totality*, applies without exception.

The double aspect of everything psychical that this demands will prove to be one of the leading *motifs* of our book. Certainly an elementaristic psychology that knows and acknowledges only that which remains as the final result of analysis must decidedly be rejected. But we must not go to the opposite extreme, and becoming blinded by the "totality" of a mental formation or process, disregard the analytical details that elucidate partial structures and movements within the whole.

d. Combination, generalization, explanation. In another phase of scientific treatment psychology proceeds to trace the *connections* between the phenomena investigated. This is *synthesis*.

In order, for example, to work out the problem of the "relation between instinctive activity and imagination," a comprehensive survey of the phenomena of instinct and imagination must first be made with a number of people; only then is it possible to determine whether certain supposed connections between the two fields of activity really exist, and what qualities they possess.

Synthetic investigations of this kind must of their own necessity exceed the confines of *pure psychological* experience. Both sides of the relation studied are not always, as in the above example, mental phenomena. On the contrary, since man and the human mind are in the midst of a world, mental phenomena are connected with the most varied spheres, even with spheres outside mind; the body, fields of external stimulation (light, sound, etc.), climate and weather, other people and human society, civilization, historical circumstances, values.

The scope of our science is thereby greatly enlarged. The findings and points of view of other sciences, such as physiology, medicine, sociology, history, philology, aesthetics, must be taken into account and combined synthetically with the findings of psychology. Out

of the multitude of possible relationships develop *subordinate fields of psychology* that are relatively independent.¹

Like science as a whole, psychology cannot content itself merely with determining empirically the concomitance of two or more phenomena. It seeks also to *explain* them, in the sense of subordinating concrete data to abstract laws. The determination of *valid general laws*, it will be remembered, is the principal task of exact natural science. When the new science of psychology began to shape its course by this earlier plan it likewise considered the *discovery of psychological laws* the essential and for a time the only aim of its work.

Its exertions were rewarded with conspicuous success; later we shall discuss results that are generally valid for each mental activity. As the work progressed it was soon shown, to be sure, that it is misleading to make these findings parallel with the strict laws of physics or chemistry. There are no formulae for mental relationships that have the constant validity and exactitude displayed by the law of gravitation or the laws of chemical synthesis.

The universal formulae of physics and chemistry assume that the facts which they connect are unambiguously correlated. This is quite impossible in psychology, however, because each fact, belonging as it does to different wholes (see above), is embedded in an infinity of relationships, each of which concomitantly influences and colors the others. Generalizing in the field of psychology is practicable only through the *fiction* by which definite phenomena are abstracted from the totality of their relationships and considered in some conceptual relation to other items. The general propositions derived in this manner (e.g., the "laws of association," the "Weber-Fechner law," "laws of memory," etc.) therefore do not have the character of true *laws* in the sense of natural science, but rather that of *rules*. They are not unconditionally valid but have merely a higher or lower degree of probability.

It is no accident that in more recent attempts to employ exact methods in psychology, the formulation of general laws is no longer regarded as the sole aim.² The exceptions to general rules are themselves being set up as problems (measures of variation), and the degree of constancy of an admitted relationship is located on a scale covering the range of probability (measures of correlation).

It is a further function of explanation to assign the observed rules of a process to a logical *category* of relations. Such categories provide on the one hand the objective basis for interpreting the empiri-

¹ See Chap. II.

² The danger of the pure generalizing attitude in psychology is ably discussed by Gordon Allport in *Personality: A Psychological Interpretation*.

cal data and on the other the subjective working-hypotheses that make possible the synthesizing of the material by the investigator.

The use of a working hypothesis holds the constant danger of one-sidedness; some one type of relation that seems suited to arranging and simplifying the material under investigation is often alone taken into consideration while others are thrust aside. Objective multi-formity of relationship is thus sacrificed to subjective expediency. A comprehensive psychology must actively resist this temptation. It must keep the way clear for a variety of points of view and subordinate these to some overlapping context.

The three most important categories of psychological explanation are mentioned here simply for the purpose of preliminary orientation.

Causal explanation—relation of cause and effect. Examples: Sensory illusions are traced to changes in sense organs, to ideas of expectancy, or to the influence of suggestion. Unduly stressed complexes of ideas in adults are explained by mental shocks experienced during childhood. The motives to crime are traced to factors of inheritance, social necessity, or membership in a gang.

Final (teleological) explanation—relation of means and end. Examples: A feeling of pain is interpreted as a useful signal in as much as it aids in removing some condition dangerous to the person. Intelligence is recognized as the means by which the individual is enabled to adapt himself mentally to new and strange situations. In the case of some deficiency “substitute functions” may appear; thus in blindness the sense of touch takes over part of the duties normally performed by the sense of sight. A final relation appears with its sign reversed when one regards certain data as contrary to a desirable aim, e.g., lack of mental inhibitions as causing antisocial contact, disturbed family life as responsible for mental unbalance etc.

Genetic explanation—relationship of developmental phases. Examples: The development of speech in children out of forms of behavior that appear prior to talking; babbling, imitation, expressive gestures. The emergence of differentiated and structured mental phenomena out of vague and indefinite states in the development of children and adults. The transition from the mental condition before puberty to that of puberty.

e. *Understanding and interpretation.* While “explanation” is concerned with the lawfulness of relationships, “*understanding*” is concerned with their meaningfulness.

The person is a whole meaningful in himself. As soon as we comprehend a single mental event as having a share in this meaningful whole we *understand* the event.

We understand words spoken by a person as a meaningful medium for our social relations with him. It is *psychological* understanding in a narrower sense when the words disclose his wishes, efforts, and interests,

when we comprehend the person himself as a whole, by means of his words.

It was believed at one time that in contrasting "explanation" and "understanding" *two* mutually hostile psychologies were implied; this opposition was at the same time identified with that between the methods and problems of *natural* science and *cultural* science.¹ It is true, as our previous exposition has indicated, that for a lengthy period psychology proceeded under the one-sided influence of natural science and neglected the wholeness for the elements, the meaningfulness for the lawfulness. It should also be acknowledged that psychology, being dominated by this attitude, sometimes offered but stones instead of bread to the cultural, social, and historical sciences. This explains the attempts, ranging from Dilthey to Spranger, to create a psychology dealing with cultural science in which meanings and values are involved. This is the so-called "Understanding Psychology."

But such a division of psychology is tolerable only if it is regarded as temporary. The past few decades have shown that a synthesis is possible. The moment natural science itself abandoned the narrow elementaristic point of view, and organic natural science in particular emphasized more and more definitely the wholeness of organisms and the meaningfulness of all processes of life, the distinction was robbed of much of its significance. In its turn even cultural science took to working with the techniques and points of view of "natural science" (statistics, research in heredity, instinct theory, etc.) without surrendering its distinctive interests.

Psychology is called upon to establish the proper bond of connection. For mental phenomena may be fully understood only as both their natural and cultural contexts are comprehended, and moreover, as the interrelation of both becomes a proper object of research. Whoever takes into consideration, in the manner of natural science, merely the organic sub-structure of man, his instinctive and impulsive actions, his corporeal unity, his temperamental constitution, the orderliness of his mental processes, is just as far removed from true understanding as one who, in the manner of cultural science, regards only the super-structure—ideals, value directions, cultural and historical references. The vital categories of drive, instinct, temperament on the one hand, the spiritual concepts of value, ideal, character on the other do not constitute two separate human worlds and cannot be assigned to entirely different scientific disciplines and workers. On the contrary they are closely related aspects of human mental life, even though the relationship is sometimes highly tense and disharmonious. Because of

¹ In German: *Naturwissenschaft, Geisteswissenschaft*.

their mutual interdependence these aspects constitute a *common* object of the science of human beings and of their experience.

To bring about this unity of understanding is the special self-imposed task of *personalistic* psychology.

We are now in a better position to describe the final task of scientific psychology, *interpretation*. Interpretation is mediate understanding; i.e., a given datum does not have its meaning in itself but takes its significance from some other deeper fact. To establish the correct relation between the two items is the task of the interpretative method. We *decipher* the first, which provides the "material of interpretation." We *interpret* the second, which furnishes the "outcome of interpretation."

Thus in *deciphering* facial features or handwriting we refer them to certain character traits; in deciphering test scores we refer these to level of intelligence and occupational fitness. Going in the opposite direction a person's secret systems of wishes are *interpreted* from his dreams; an artist's deeper levels of experience are interpreted from his work.

If we examine these examples we discover a common feature of all interpretation; this is the penetration of *depth*, which points from without inward. The material of interpretation is always more external, isolated, salient and is thus capable of direct empirical statement. The outcome of interpretation is more internal, fused inwardly with the totality of the person, and therefore more hypothetical. It is this "vertical" nature of interpretation that makes it a task of unusual difficulty, for the penetration of the totality involves that which is indefinite and difficult to express. It is the way of approach to the ineffable, to the real meaning of personality.

The danger is great that this way will be entered upon too lightly. We are too eager to present as definite a formulation and as sharp a subdivision of that personal core as we give to the external items that are to be deciphered. Such simplification results in "character readings" that consist in substance of a mere index of juxtaposed qualities. Thenceforth a single group of indications, e.g., handwriting, is used as a universal key to the knowledge of people, and every particular item in the group is related to some isolated trait ("monosymptomatics").

Since there is a demand on the part of the public for such descriptions of the mind and interpretations of character, some popular system of character-reading develops, which sometimes degenerates into dubious "quackery." In another place we shall have more to say of this.

Even the scientific methods of interpreting personality, however, are not always kept free from the above-mentioned errors. Psychoanalysis shows some inclination toward monosymptomatics in

that it uses as symptoms only involuntary expressions; so too does experimental psychotechnics, in resting its interpretations of vocational aptitude solely upon tests.

In order that these dangers and hazards may be met, the great task before psychology in the future is that of working out a scientifically acceptable and practically reliable *technique of interpretation*. This must satisfy two requirements. (1) The method of interpretation must be *personalistic*, that is, it must recognize single activities as reflections of a totality. (2) The method must be "*polysymptomatic*," i.e., capable of handling the several spheres of mental symptoms or indices in a comprehensive way, and of adapting itself to any special problem in psychodiagnostics. This flexibility should include a cautious and critical approach to insights and techniques that have been developed by monosymptomatic systems of both the popular and the scientific variety.

The method of "interpretation" elucidates further the so-called psychology of *Verstehen* ("understanding"). If as we observed, understanding is immediate in small measure only (purely "intuitive"), and mediate in far larger measure ("interpretative"), then the psychology of understanding requires a broad and deep *factual basis*. This must alike cover symptoms that are to be deciphered, traits of personality that are to be interpreted, and finally, the relations between the two. It is under such an *empirical* approach as this, which is impossible without detailed research, that the psychology of understanding may be brought once more into close contact with the psychology that has held the attitude of "natural science." These methodological considerations hold the promise that at its very start the *unified psychology* is rightfully independent of any antithesis. Within it there is room for the most varied interests, directions, and aims.

CHAPTER II

SPECIAL FIELDS OF PSYCHOLOGY

In the preceding chapter we marked out the central province of our science, "general psychology," in terms of its tasks. We must now view its numerous outlying and connecting fields.

In so far as they present *theoretical* problems these fields comprise two large groups; disciplines that treat mental phenomena not for themselves but in their *relation to the world*, and those having for subject-matter not the generalized forms and laws of mental activity but its *differentiation*. The fields of *practical* application form a third group in psychology.

I. MENTAL ACTIVITY AND THE WORLD

The "world" of mental activity includes both the world of nature and the world of culture. The fact that the sciences dealing respectively with nature and with culture are entirely different, has had its effect upon psychology.

I. MENTAL ACTIVITY AND THE NATURAL WORLD

The natural sciences have served not only as a methodological model for psychology; they also have formed a direct connection with it in *subject-matter*. This is true above all of physics, physiology, and biology. Even the *names* of the psychological doctrines express this connection. In the sixties and seventies of the nineteenth century "psychophysics" and "physiological psychology" were founded. There are also many forerunners of "biological psychology," though its true development belongs to the present century.

a. *Psychophysics*. Gustav Theodor Fechner, by profession a physicist but a man whose versatility knew no professional bounds, conceived the lofty project of a science that should embrace both physics and psychology in somewhat the following manner: Physics treats of the elementary conditions of light, sound, the pressure of bodies, etc., which are called "stimuli" in so far as they affect man. Psychology is concerned with contents of consciousness that correspond to these stimuli, that is to say, with "sensations." *Psychophysics* is accordingly the science of *lawful relations between stimuli and sensations*.

In what way do sensations follow the endless gradations and qualitative differences of stimuli? This was Fechner's problem, and he not only clarified it with the aid of the important concepts of "absolute threshold" and "difference limen," but sought also to solve it with the new method of "measurement of sensation" which at that time made a tremendous stir. As a result of this bold undertaking, he thought he had discovered a comprehensive and universal law, which will later concern us under the title "Weber-Fechner law." To be sure, the law did not fulfil Fechner's hope of establishing *the* general formula for relations between the physical and psychical worlds; nevertheless it continues to be important as the leading point of view for explaining and understanding important mental relationships.

b. *Physiological psychology.* As the science of the functioning of the organism, physiology of course took notice from the beginning of the connections between the nervous system, circulation, metabolism etc. on the one hand and mental processes on the other; but these connections were considered only in so far as it was necessary for the understanding of true physiological processes. This situation was reversed by Wilhelm Wundt, who was himself a physiologist. Wundt wished to institute a *psychology* that brought in facts of physiology. Sense perception, reaction times, range of consciousness, expression of feeling, were a few of the chief topics that he investigated always with reference to accompanying bodily processes, by a many-sided use of the experimental method. His *Physiological Psychology* in three volumes was for decades the standard work on modern psychology; the psychological laboratory which he founded in Leipzig became the model for countless psychological laboratories all over the world. To that early period belonged among others Hering, Johannes Müller and Hermann von Helmholtz. The latter, although not a psychologist in the proper sense of the word, gave a strong impetus to our science through his pioneer work in physiological optics and auditory perception.

Physiological psychology includes work in three principal areas: sense perception, functions of the brain, motor processes. The accomplishments in these fields of research during the half century since Wundt are immense.

The progress was due in part to the enrichment of psychology by the new discoveries of physicians, physiologists, and anatomists. For example, research work on the localization of certain functions in the brain influenced the manner of interpreting conscious phenomena. On the other hand psychologists penetrated deeply into physiological problems with investigations of the senses of hearing, touch, and vibration, the perception of form, expressive movements, etc., and have produced many new contributions and theories.

This movement continues to make progress at the present time. Its center of gravity became somewhat displaced as the consideration of the organism as a whole came more and more into the foreground, preparing the way for a true biological psychology.

c. *Biological psychology.* Mental life is inseparably fused with the total life of the individual. The points of view developed by biology in order to explain organic life in general are on this account applicable to mental processes of life.

Thus at the time the theory of evolution was adopted (Spencer, Darwin) the attempt was made to show consciousness to be partly the product, partly the agent of biological processes in the struggle for existence, adaptation, progressive differentiation and integration. The two conditioning factors in organic evolution, heredity and environment, which were at first considered only in relation to bodily constitution and functioning, gradually became apposite for explanations of mental qualities and processes.

The circumstance that biology had developed predominantly along the line of study of subhuman organisms also characterized its extension into psychology. It goes without saying that *animal psychology* must be centered around biology. In so far as *mental* phenomena appear in animals they are deeply embedded in the vital needs of self-preservation, propagation, etc., and may be understood only in this relationship. *Human psychology* became linked up with the consideration of those mental processes which are identical or at least similar in men and animals, and in consequence with vital substructures and somatic foundations of mind.

In viewing the present state of these endeavors we find that present-day psychology takes far more interest in the *vital factors* than was formerly the case. Typical of this interest are the important rôles that vital categories like urge, drive, instinct, are playing in certain schools of psychology, in connection with the attempt to explain even the highest forms of creative, moral, artistic, and religious experience as effects or transformations of primitive drives. The result is often too close an approximation to animal mentality; the full significance of *specifically human* mental functions is thereby slighted. But as a reaction against a highly abstract theory of the soul, this diversion of interest to realities underlying mind was and is of the greatest importance.

The categories of urge and instinct are properly speaking neither purely psychological nor yet purely somatological, but pertain rather to that primitive region of life in which the physical and the psychical are still undifferentiated. Thus biological psychology has something in common with personalistics and its concept of the "psychophys-

cal neutrality" of the person (see Chapter IV). There is a similar relationship with the modern doctrine of "constitution," which embraces bodily structure and movement as well as the dynamics and statics of mind. A "biology of the person" is even beginning to be mentioned, though in it the "person" is, to be sure, identified too closely with the "vital person" alone. The widespread use of the concept of the unconscious is also due in part to the biological point of view.

The movement is carried to extremes by those who wish to retain only the *physical* aspect of the organism as the object of the study of man while passing over the psychical aspect entirely. This occurs in "behaviorism," which has been especially prominent in the United States, and also in Russia in the related discipline of "reflexology." It is deliberately limited to the investigation of the overt physical behavior of man and animals in definitely circumscribed situations, since only such behavior is objectively demonstrable and subject to verification. This scheme is held to be completely adequate for obtaining knowledge of all the life-processes of the organism. Whatever takes place internally to this behavior (that is, whatever is experienced in consciousness) cannot be apprehended in a form that meets the scientific requirements of objectivity, and must therefore be excluded from science.

It must be conceded that wherever the inner life of the organism is meagre and difficult to identify, e.g., in animals and infants, the investigation of objective behavior may be extremely important. Moreover, even in highly developed organisms conscious processes are intelligible only in their relation to modes of behavior that are subject to exact observation. The study of behavior is consequently to be welcomed as a valuable discipline within psychology, but the contention that it renders superfluous everything that has previously been called psychology must be rejected.

The changes undergone in recent years by psychological concern with the *causal factors* of life, heredity and environment, are worthy of notice. The advance is so important that it is already proper to speak of the *psychological study of heredity* and the *psychological study of environment*. This demonstrates the need for taking fundamental principles *from* purely biological theories of heredity and environment, but without under any circumstances taking them *over* unchanged. *Man* is determined by heredity in a different way and to a lesser extent than plants and animals, and *mental* activity is subject to hereditary conditioning that is quite different from that affecting bodily structures.

Mental qualities are not inherited as fixed and definite entities, but simply as indefinite possibilities; it appears ill-advised to attempt to

apply the strict laws of biological inheritance to them. The problems themselves are different. To what is being treated today under such headings as good and bad heredity, psychology of the family, racial psychology, inheritability of talent, genius, criminality, insanity, there are only partial analogies or none at all among problems of heredity in animals and plants. The relations between the psychology of inheritance and medicine are far more marked; and likewise with history. Yet its specific problems and techniques must be kept apart from these two disciplines as well.

The case is similar with the study of *environment*. The environment of animals (as investigated, for example, by von Uexküll's school) is rigid and narrow. Man has a labile, endlessly changing environment, filled above all with social, cultural and ideal aspects, that necessarily provokes novel mental reactions not needed and not possible for animals.

This development beyond merely biological levels is especially clear where the relations of *both* causal factors are involved. While with plants and animals hereditary factors on the one hand and environmental factors on the other may be sorted out fairly conclusively and assigned to separate disciplines, this possibility stops with the human mind. It is no longer a case of inheritance here, environment there; the true problem is the continual fusing of both within the person in connection with his spontaneity (the so called convergence theory).

2. MENTAL ACTIVITY AND THE CULTURAL WORLD

The relation of the human mind to *culture* has been approached by psychology under three chief points of view. These are the points of view of society, history, and cultural domains.

a. *Psychology of "super-individual" data.* This title is simply a make-shift; under it belongs everything that is included under the names folk psychology, social psychology, psychology of the mass, etc. The point of departure is furnished by the basic observation that there are *super-individual* mental phenomena and mental phenomena proceeding from the intercourse between individuals.

Certainly each mental experience is primarily individual; but from the first moment of life this experience develops in kind and content from constant interrelations with others. This perpetual interplay gives rise to a number of phenomena that have their own existence and follow their own laws *as if detached from the individual*. Many degrees of this "detachment" are possible, ranging from those socio-psychical conditions in which the individual remains recognizable and keeps his characteristics (sexuality, imitation, leadership), all the way to those in which the individual disappears completely in the mass and

has only an anonymous stake in the "super-individual" phenomena, as in the case of the revolutionary spirit, panics, the development of an occupational type of mind, the character of a people.

The study of super-individual psychology had two distinct origins. In the sixties of the nineteenth century Lazarus and Steinthal proposed the conception of *folk-psychology* and outlined its scope. Soon after the turn of the century this field was summarized in Wundt's monumental work, *Völkerpsychologie*. The carriers of socio-psychical phenomena were considered to be societies of *peoples* and of *primitive* peoples in particular. Their characteristic speech, their religious and mythological cults and convictions, their customs and laws, were objects of study. Since historical change appeared to play no essential rôle with such peoples, it was deemed possible to discover in them the earliest operation of universal laws of folk-psychology.

The other source was sociology, whose central problem is that of society as such; out of it came *social psychology*.

This was less concerned with the mental contents of particular societies than with the mental processes that attend the origin, development and structure of *society in general*.¹ Thus it deals in part with the more formal and dynamic topics like competition, suggestion, the formation of classes in society, fashions, assimilation and differentiation, always with reference to *psychical* causes, forms of expression, and results. Just as in folk psychology, and here even more pronounced, is the endeavor in social psychology to formulate generalized *laws* that are independent of historical circumstances at any given time. Both branches of the psychology of super-individual data consequently strive to approximate natural science in exactness or universality. For this very reason they must be supplemented by an historical approach.

b. *Psychology of history*. Historicity is such an essential factor in human culture that its claim to recognition must be honored by psychology. This is true with reference to historical personages and "super-individual" makers of history as well; peoples, nations, civilizations; since all of these, being *unique* historical patterns, have mental characters of their own. These cannot be explained simply by applying universal laws, but must be *understood* in their singular natures and tendencies. The "psychology of *Verstehen*" (understanding) mentioned above was developed out of the historical interest in great men. Wilhelm Dilthey, the founder of that discipline, had been a biographer and student of poets and scholars.

Since Dilthey, psychological biography has been considerably altered and enlarged. Not only are the psychological *natures* of individual personalities now studied, but also their *conditioning* by history. In

¹The "group mind" in McDougall's terminology.

this connection biological points of view, e.g., those of genealogical transmission and psychology of the milieu, have been introduced.

The numerous schools of psychology attempted with varying success to apply their theories to biography. There are, for instance, biographies from the pens of psychoanalysts, Möbius' "Pathographies" of thinkers and poets, and Charlotte Bühler's recent attempt to analyze life-histories.

The unhistorical point of view of the older folk-psychology is less and less adequate for the investigation of peoples the more clearly they are differentiated into *historical nations*. A *psychology of civilized nations*, which we do not as yet possess, but for which there is pressing need, should include a comprehensive view of the incommensurable peculiarity of each people as contrasted with every other; but on the other hand it must avoid devising rigid formulae that are supposed to be valid for covering all phases in the history of a given people, and all individuals involved. The question of causation also presents many hazards. The mental development and nature of any nation may be understood only in terms of the coöperation of biological heredity and historical destiny; racial unity or mixture plays as much of a part in it as region and climate, economic and political life, community of language and culture. Any theory that would make of *one* of these factors the predominant or exclusive cause of the collective mind produces only a caricature. A psychology of nations is such a difficult undertaking that the cautiousness of science up to now is quite easy to comprehend, the greatest danger being unscientific simplifications destined to serve political purposes.

c. *The psychology of cultural domains.* The historical development of civilization includes not only the differentiation of successive forms and stages of culture but also increasingly distinct differentiation into *coexisting spheres of culture*. Practical and theoretical factors run parallel in substantiating these cultural spheres. The more varied the individual's attachment to civilization, the more distinct the formation of separate domains like religion, art, science, politics, law etc., which gradually acquire their own objective manifestations, principles and ideals. They exert intense influence over people, sometimes with despotic exclusiveness, and finally result in the development of special scientific disciplines (aesthetics, law, pedagogy, etc.). In order to prevent the complete absorption of cultural interests into specialized departments, the synthesizing function of philosophical and psychological reflection was needed. A specific "psychology of culture" arose in Germany, advanced by Scheler, Spranger, Litt, Jaspers and many others. This discipline is concerned with the relations, in terms of value, of the human mind to objective spheres of culture. Its subject-matter is not the constitution and orderliness of conscious

contents as such but the *cultural* significance of these contents.

Such meaningful relationships may of course have "negative signs," as when criminal inclinations, antisocial tendencies, etc., become objects of psychological study. But the primary interest of the psychology of culture is *in the positive attachments between mind and culture*. This point of view not only furnishes the principle of selection according to which certain mental phenomena are chosen for scientific treatment while others are neglected; it amounts to an implicit bias in comprehending mental activity generally. It assumes a kind of pre-established harmony between the structure of mind on the one hand and objective realms of value on the other.

Thus Spranger postulates six "types of men," i.e., ideal human types determined by preferential interest in one of six realms of value. These are the economic, the intellectual, the political, the aesthetic, the social, and the religious types.

It may be observed that the psychology of culture is largely motivated by philosophical interests. This is certainly no disadvantage in itself, but it may become a danger if the philosopher's speculative habit of thought is offered as a substitute for true empirical psychology. In reality mental life is never as simple, transparent, and logical as the "ideal typologies" of the psychology of culture lead one to believe; its stratification, its impregnation with nonsense and irrationality, its internal tension that opposes vital forces to cultural forces, are often unsatisfactorily represented by this method of approach.

II. INDIVIDUAL DIFFERENCES

I. DIFFERENTIAL PSYCHOLOGY. CHARACTEROLOGY

No individual is exactly like any other; each has his own peculiar individuality. This statement, which is trite in itself, cloaks a multitude of psychological problems. Curiously enough, however, they were until recently wholly delivered to common sense psychology and to a more or less amateurish study of personality.

Up to the close of the nineteenth century academic psychology either ignored problems of individual differences or treated them casually with that timidity often shown by abstract science when driven by necessity to contemplate the concrete aspects of life. During that century only a few isolated investigators had attacked the problems of individual differences in any more serious way, but without notable effects (Carus, Bahnsen, Galton, et al.). Geniuses, like Nietzsche, for instance, who grappled for the origin of human individuality were not counted among professional psychologists in the true sense.

A change was brought about by the last generation, and here too older and newer currents may be distinguished. The former came out of *experimental psychology*. It became clear in the course of experiments involving mental operations that different people reacted differently to the same tasks. This variability was viewed for the most part simply as an annoying limitation upon the laws of general psychology that were being sought, but it was soon recognized that the variations themselves rested on common principles of less extended applicability, or in other words, that they demonstrated *individual peculiarities* in mental activity or definite *degrees of mental ability*.

Differential psychology was founded on the basis of this insight.¹ It is not intended to be a true psychology of "individuality" but a science of the essential differences of the functions and qualities of mind, and hence a *bridge* between general psychology and psychological comprehension of individuality.

Under this discipline each mental function received differential as well as general psychological treatment; thus the differential study of intelligence took its place beside the general psychology of thought, the differential doctrine of volitional types beside the general psychology of will, etc.

The *comparative* method plays an important part in differential psychology. Groups of people formed according to definite non-psychological criteria are compared with one another with respect to their diverse modes of conduct and response, as are the two sexes, those belonging to different classes in society, and various age groups.

One feature is common to all these researches in differential psychology: *the issuance of a single mental function*. Individual differences in *every* such function are either formulated as certain basic forms called "types" (perceptual types, attentional types, etc.) or arranged quantitatively; the most familiar example of the latter procedure is ranking in intelligence. The particular measures of isolated functions are finally tested for closeness of correspondence ("correlation"); the constancy of this relationship, which may be expressed quantitatively, furnishes the most essential synthetic principle of differential psychology.

The *limitations* of differential psychology are thereby described at the same time. For the correlation of single traits, however close, never yields a picture of that totality by which the individuality of any person is represented. Differential psychology itself had therefore to be modified by the modern doctrine of wholeness. For this purpose a concept was taken up which had always designated for popular psychology the "real" and enduring essence of human individuality,

¹ The name was proposed by me in 1900, when a methodological foundation was provided.

but which had long been avoided by scientific psychology. This was the concept "character," and its introduction betokens to us the consequent revival of *characterology* within our science (Klages, Utitz, and many others).

In this field psychology cannot, to be sure, keep strictly to its official bounds. It must take into consideration and work over what practical research in human nature, medicine, study of expression, graphology, etc. have attained in the way of characterological insights; on the other hand it must fend off the dangers threatened by a romantic or wholly occult dilettantism, for characterology is by nature a fertile field for the kind of quackery already mentioned.

Single traits of character are never disconnectedly juxtaposed, but are interdependent moments of a unitary *structure* of character (even though this is multistratified and abounds in internal tensions). At present interpretations of expression are methodologically in the foreground, for *modes of expression* of the personality are patterned after its characterial core in a more immediate way than are the *modes of performance* with which old style differential psychology was primarily concerned.

Moreover, it would be erroneous to suppose that the new characterology could simply occupy the ground of differential psychology. For man and human individuality are revealed even to characterology only in certain perspectives that require supplementation by points of view of the other sort. Totality and multiplicity of traits, expression and performance, must be employed jointly to obtain knowledge of mental differences of individuals and groups.¹

2. DEVELOPMENTAL PSYCHOLOGY IN GENERAL

In the concept of development lies not merely a bare sequence of states and phases, but *evolution*; preparation, germination, growth, maturation, and recession as a meaningful process that is by nature of an organized kind.

The idea of evolution, it will be remembered, dominated nineteenth century science, especially biology and history. Even during that period there were successful attempts to apply it to psychology as well, but as an independent, self-contained discipline, *developmental psychology* is a product of the twentieth century (Felix Krueger and his school, Heinz Werner, *et al.*). Its fundamental problems are the assimilation of each isolated mental phenomenon into the *development* of the mind, the description and interpretation of each *phase* in the total course of development, the investigation of the laws, *differentiae*, and conditions of mental development.

¹ The latest development in the theory of human individuality is represented by Gordon Allport's recently published *Personality*. His approach is personalistic since his doctrine of traits of personality is based on both the wholeness and the uniqueness of each individual.

On this basis successful attempts are being made to attack and compare the most *varied forms* of mental development. These include *individual* development from infancy to adulthood, *cultural* development from the primitive to modern civilized man, *phylogenetic* development from the lowest form of life through more and more highly organized animal forms to man, and finally, *mental recession* too, in senility and in pathological manifestations. These parallel views of development are not intended to suggest any simple equating of the processes of ontogeny and phylogeny (as was once advocated in the premature extension of Haeckel's biogenetic law to psychology). On the contrary they confine the view to certain analogous basic forms and dynamic peculiarities in *all* primitive and *all* mature mentality, wherever we may encounter it, apart from the essential differences that naturally obtain between children, animals, and human primitives.¹

At the same time the possibility is presented of obtaining such approaches, explanations and interpretations in each of the fields mentioned, as furnish protection from methodological errors. As a civilized adult the psychologist himself belongs to a high stage of development. Consequently two dangers menace him whenever he seeks to investigate primitive mental life. The one is that of oversimplification, the other that of too close approximation to his own mature state. Thus the infant has sometimes been regarded as a *tabula rasa*, sometimes as a miniature adult; animals have been viewed either as soulless machines or as possessors of intelligence of a human order; the primitive is sometimes looked upon as a "savage," sometimes as essentially similar to a civilized adult. We had first to learn to observe, think, and interpret in terms of developmental psychology in all these domains in order to overcome these defects.

3. CHILD PSYCHOLOGY AND PSYCHOLOGY OF ADOLESCENCE

Psychological research in the development of the individual was at first directed upon the earliest stages of life and gradually proceeded to the investigation of higher age levels. The picture presented by this extensive work in child psychology is a brilliant and variegated one. This is partly because *practical* considerations required the working out of pertinent problems, the psychologist being led into coöperation with kindergartens and schools, medicine and hygiene, correction and welfare work. Moreover the *theory* of modern child psychology and the psychology of adolescence is a miniature reproduction of all the currents and tendencies that are characteristic of the psychology of our day as a whole. There is no doctrine and no method

¹ Cf. Heinz Werner's *Developmental Psychology*.

that has not been applied to the mental activity of the growing individual.

Despite all its incompleteness and uncertainty in individual particulars, however, the outcome is extremely important. We have become sharp-sighted for countless modes of mental life and expression in the child that were indeed always within reach of the adult but nevertheless remained hidden and unknown.

How primitive seem the observations and how naïve the interpretations of Preyer, the father of modern child psychology (1882), when compared with the present chances for describing, explaining, and understanding the behavior and mental life of early childhood. Progress in our knowledge of the school child, which commenced only at the turn of the century with systematic investigation by means of experimental psychology (Meumann, Binet), is extensive. So too with the period of adolescence, that only two decades ago was a book with seven seals.¹

In the beginning this research was essentially the *natural science* of the child's mind; physiologists and physicians were the first investigators. The scope was gradually enlarged to that of a general child psychology in which the points of view of natural and cultural science were united. The study of individual children was complemented by a *social psychology* of children and adolescents. Then too, the study ceased to be restricted, as at first, to children of the educated classes; the pathway to the mental life of the *proletarian* child was opened. Finally the strong belief in the newly discovered "eternal law of nature" of growth and development in children had to be shaken, for it turned out that even these phenomena *vary* greatly with differences in circumstances of life, with the unconscious influences of the *milieu*, and with the conscious influence of education.

Two examples of this may be given: The depictions of mind at puberty that were formulated by German psychologists about 1910 at the climax of the German "youth movement" and were at that time held as valid portrayals, are in part no longer conclusive. The child psychology that was worked out under the cultural and economic order of western Europe is not transferable without further modification to the child in China or Russia.

Thus beside the general psychology of childhood and adolescence a *cultural typological* (Martha Muchow) and a *comparative* psychology of childhood and adolescence are beginning to develop. This is an inexhaustible topic for research in future decades.

On the other hand, scientific studies of children from the point of view of *natural science* have contributed greatly to the progress of child psychology. During the entire period of individual development

¹ With some exceptions, as G. Stanley Hall.

bodily and mental processes are closely connected and reciprocally determined. Thus the new insights furnished by the physiology and pathology of the child and by research in sex and heredity, necessarily became of great importance for the understanding of *psychical* facts of development as well.

4. PSYCHOPATHOLOGY

a. *Normality and abnormality.* One of the most incisive distinctions in human life is that between "healthy" and "sick." As to the mind the antithesis is usually designated by the expressions "normal" and "abnormal." Here separation is even carried to such lengths that two entirely different sciences are occupied with the two mental groups; psychology with normal, psychopathology with abnormal mental activity.

The division, however, cannot be final; indeed the further research and applications in the two fields advance the more it proves to be only provisional and artificial.

Where the "abnormal" begins and ends cannot be determined merely from the expressly abnormal forms familiar to the psychopathologist; in this regard we must also consult the psychologist, who knows the frequently underestimated breadth and multiplicity of patterns of normal mental life. As a result the boundary between the abnormal and the normal has lost its sharpness. "Border line" conditions and transitional phases between disordered and healthy mental activity then become all the more impressive and important.

This relationship between the two branches of research becomes strengthened through the modern conviction that *sickness* is not an isolated condition of a single organ or a part of the personality, but is an alteration of the person as a whole. For mental disturbance in any individual is comprehensible only in terms of his own unalienated mental make-up; in the state of alienation psychical features which belong to the essential normal inventory of the personality, are manifested by their accentuations. On the other hand, we know today that even when a person, seen as a whole, is appraised as "healthy" or "normal," the complex structure of his personality contains regions of lesser resistance, carrying the germs of mental aberration.

Every psychiatrist, neurologist and hygienist needs psychology as the foundation for the theoretical treatment of his problems; and while these workers were formerly inclined to knock together a psychology, often a somewhat primitive one, for their private use, contact has now been established with the great movement of professional psychology—to the advantage of both.

The modern theory of speech disturbances could not be conceived without the assistance of Gestalt psychology, the psychology of normal speech, and research in the speech of children. Just as fruitless would be the investigation of the feeble-minded without the finely articulated psychological method of testing intelligence, hygienic work with sensory defectives (blind, deaf, deaf-blind), without the recent psychology of perception and expression. The psychopathology of childhood and puberty made its sweeping advances only by reason of its close alliance with the normal psychology of these phases of development, etc.

Aside from such specific instances the *total character* of modern psychopathology is strongly determined by psychology. The present-day conception and portrayals of psychopathological types of personality and individuality, and the subtle and many-sided description of the forms and courses of mental disease would be inconceivable without the thoroughgoing utilization of what phenomenology, personalistics and characterology have accomplished in the mean time.¹

Of no less importance is the influence in the opposite direction. Many mental phenomena are not only revealed the sooner under alienation in their abnormal and striking guise, but are also much easier to formulate theoretically than in normal people. But while the crude macroscopic structure of a mental phenomenon is noticed first in pathological cases, it sharpens the sight to recognize microscopically, so to speak, the corresponding processes and conditions of normal activity as well.

This process operated in the ancient body-mind problem. Diseases and injuries of the brain, disturbances of the circulation, disorders of the sense organs had first to become urgent by way of their peremptory psychical consequences in order for the general and normal influence of mental activity by the body to be rendered subject to psychological research.

A half century ago interest in hypnosis led the physicians to create the concept "suggestion" in the sense of "abnormal influencing of the will"; but this concept soon burst its narrow pathological bounds and became enlarged into a general category that has long been indispensable to specific procedures in normal psychology.

Modern psychiatry has evolved two large formal groups of mental disease, manic-depressive insanity and schizophrenia. The distinction was transferred to normal psychology by Kretschmer and others, where it is being developed as the typical distinction between the cyclothymic and schizothymic temperaments.

Another typology of normal psychology that is extensively employed today is also derived from psychiatry. Jung delimited and described the types of outwardly turned ("extraverted") and inwardly turned ("introverted") persons.

¹ Jaspers' *Psychopathology* may be mentioned as an especially illuminating example.

In the face of these currents of influence which proceed from psychopathology, the concern of general psychology is doubled. The latter must *remain susceptible* to all these interests and influences, incorporating the new points of view into its own body of knowledge and research. It must also contrive that re-formulation and re-emphasizing which are urged by assimilating and "normalizing" the phenomena. In translating his insights into terms of normal psychology the psychiatrist or neurologist may easily carry over an undue pathological emphasis. Therefore the normal psychologist must not restrict himself to simple borrowing, but must produce a great deal of independent, critical, and *constructive* work in order to assign the proper place in his theory of the normal mind to the significant contributions of pathology.

b. *Depth psychology.* The same rule holds above all in dealing with an especially powerful wave of influence from psychopathology that has permeated psychology. The expression "depth psychology" designates all those conceptions that explain the phenomena of conscious life and voluntary action by reference to the unconscious depths of the personality. Today there are numerous, in part conflicting, movements of depth psychology, but they all came out of *pathology*; psychiatrists and nerve specialists were their sole creators and are in large part their exponents.

At the turn of the century Sigmund Freud founded "psychoanalysis" under the influence of Breuer's instigation. Many completely independent branches have resulted from secessions; thus Alfred Adler's "individual psychology" and Jung's "analytical psychology." It is pointless to mention names involved in this enormous international movement, especially since there now exists an extensive special literature of books and periodicals.

The debate that is being carried on *within* psychopathology and psychotherapy themselves over the value of the theories and methods of depth psychology must remain outside our consideration; we are interested only in the relation of these doctrines to *normal psychology*. The claim is advanced in all quarters that they are applicable to normal psychology, and they are in fact being transplanted; psychoanalysis has penetrated deeply into folk psychology and into the psychology of art, poetry, and religion; and the adherents of Adler's individual psychology see in their theory and technique the sole psychological implement of education. What is the justice of such claims, extending as they do far beyond their pathological origins?

Without doubt normal psychology is greatly indebted to depth psychology, above all in regard to psychological *theory*. The very concept of "depth," with all its implications, signified a revolution in

psychology. Man is more than his *surface* reveals him to be through bodily activity and conscious contents; the surface phenomena are not intelligible in themselves; they indicate origins and goals operating apart from consciousness. From such ideas there resulted two tasks entirely new to psychology: (1) to study the connection between superficial consciousness and unconscious depths, (2) to set forth clearly the nature of the unconscious depths themselves.

The connection between consciousness and the unconscious proved to have a dual significance; conscious contents and conscious processes are partly manifestations, partly disguises of the unconscious. "Adequate" coming to awareness appears as the most immediate *informative manifestation*, as when an unconscious impulse leads to an appropriate idea of a wish. The strongest *disguise* is "repression," as when an idea disquieting to consciousness is thrust off into the unconscious where it remains inaccessible to consciousness.

Between these two poles there extends that scale of "conscious-unconscious" relationships that forms the principal theme of depth psychology. The unconscious is not perfectly hidden; demonstration of it is indirect, devious, symbolical, rather than immediate and adequate. The contents of consciousness are thus *hidden and yet subject to discovery*, they are *symbols* of the unconscious that must be deciphered in order to make their true meaning manifest.

This "meaning," however, is recognizable only if it is known *what is* symbolically represented by the conscious phenomena; a *theory of the unconscious* is therefore necessary. Common to all proposals is the view that the unconscious is the active power of vital and mental processes, and in this *dynamic conception of the unconscious* may be seen a further contribution of depth psychology. The motive force does not lie wholly in consciousness itself. This proposition, at least in the restricted formulation here given, must be taken as conclusive.

At the same time, these unconscious forces have *direction*; in them certain *tendencies* become effective in determining the rôle of consciousness. In admitting that there are such relations between the unconscious and consciousness, the different theories have something in common. They are also united in the view that the symbolical meanings of the contents of consciousness are to be grasped in terms of these tendencies. Such meanings are manifested, it is agreed, as the results of sublimation, abreaction, overcompensation, as protective, defensive, and flight-mechanisms, or as other unconscious strivings toward goals.

Today the basic ideas described above already belong to the body of psychological knowledge. They must, of course, undergo drastic revision in the course of their assimilation into general psychological

theory; but they are no longer to be expelled from our science by sophistry.¹

But an important distinction must be made between the basic ideas and their specific utilization. In the *concrete* work of the schools of depth psychology these leading ideas are in part overgrown with special theories and techniques that seriously impair their value for normal psychology.

The "Unconscious" is elevated into a kind of mythical force that sets up a secret despotism in the individual. At the same time a very definite nature is ascribed to this force. Not being satisfied with wrongly locating it, as a dynamic impulse, in the purely vital sphere by designating it an "urge" or an "instinct," its proponents raise a single kind of urge to the throne and conceive human activity and experience to be for the most part the expression and symbolical transformation of this postulated urge. The person is thereby divided up into core and exterior, into original nature and derivative nature; and the original nature is sharply delimited and defined in a *one-sided* manner, while the vast majority of all phenomena of life and mind are granted derivative character only and a secondary, ungenuine significance. This *dualism*, which is intrinsic to all depth psychology, is strengthened through the separation of the unconscious and the conscious not only in order of rank (core and exterior) but as an actual opposition, a primordial enmity within the person.

The inadequacy of this doctrine, which runs counter to the conception of the person as *unitas multiplex*, may at once be recognized from the fact that the dominant core i.e., the basic urge, is conceived *differently by each school of depth psychology*: as the sex instinct by psychoanalysis, as the instinct of self-assertion by individual psychology, as the store of super-individual tendencies (inhering in the individual's racial heritage) by Jung's school.

These one-sided views naturally determine the principles and *method of interpretation*. Any psychical datum appears in a wholly different light as the symbolical expression of a tendency to inferiority (Adler), as sublimated sexual activity (Freud), or as a kind of atavism (Jung). The obstinacy and monotony with which the adherents of a given school of depth psychology exploit the same few schemes of interpretation in order to explain everything mental, whether pathological or normal, individual or cultural, makes it impossible for the psychologist who is not bound to it by oath to regard this as true scientific activity. Wherever the purpose is to deal practically with people, as in psychotherapy and also in certain pedagogical situations, unswerving faith in the truth and the boundless application of the same few dogmas on the part of analyst and subject may bring

¹ Cf. Chap. IV.

about a desirable atmosphere of suggestion. But these considerations no longer hold water in psychological *theory*, for such an uncritical perversion of the method of interpretation spells the impoverishment, indeed, the falsification of the picture that we make for ourselves of the mental life of man.

5. ANIMAL PSYCHOLOGY

The student of animals who surveys the whole wide range of zoölogical and biological problems necessarily comes upon manifestations of the "mental" activity of animals, or to put it more cautiously, such modes of animal behavior as suggest mind. This formulation at once reveals the difficulty of the problem. The manifestations in animals are, to be sure, far more uniform and simple than those in people; it is therefore not too difficult to identify them superficially through the exact media of experiment and observation. But the inner forces that lie at the bottom of these expressions, the impulses, the various modes of experience, are so different from those of man that their true psychological interpretation is beset with obstacles that do not occur to the same degree in human psychology.

It thus becomes easy to understand that the needs of exact animal research are closely akin to the *behavioral* point of view. Indeed the most important results of *behaviorism* must be credited to the field of animal study.

While natural behavior in freedom and captivity is recorded through observation and the cinema, behavior under specific conditions has been studied by experimentation, as, for instance, when under the influence of emotion (fright, hunger) or during training for the performance of certain accomplishments.

In regard to this last item the United States has unquestionably set the pace; in that country countless learning experiments have been made with rats, dogs, monkeys and lower animals. These have afforded not only more exact investigation of the capacity for training, but new insight into the total patterning of animal reaction.

The environmental research of von Uexküll and his pupils may also be recalled. Its object, which likewise involved the avoidance of "psychological" interpretations, was to determine the relationship of every animal species to its specific environment and the influence of this environment upon the animal.

But the scientific need for throwing light also on the *background* of animal behavior is entirely too urgent to be downed. European and especially German animal psychology has therefore constantly striven to draw conclusions from behavior in regard to the presence or absence of certain mental *phenomena* (ideas, feelings) as well as in regard to certain mental *qualities* (memory, intelligence, temperament).

Thus Köhler sought to learn whether there is "insight" in apes as a characteristic of embryonic "intelligence"; Katz studied the social psychology and characterology of chickens; Volkelt raised the question as to whether conscious "images" of prey could be spoken of in the case of spiders, etc.

A strictly scientific investigation of the mental life of animals is all the more necessary since *metaphysical* dogmas and prejudices often cloud an impartial view and a positive comprehension of these very questions. Not only the layman judges animals in accordance with the position which they occupy in man's world; even in scientific research these unreflective attitudes are in evidence. Nevertheless there are signs of gradual progress toward objective knowledge. Animal psychology must steer its course between two dangers, the hypothesis of too wide a divergence of animals from man and of too close approximation to him. When man is contrasted with all other creatures as totally different in kind, this gulf is extended to the mental side. This attitude stresses the primitiveness of mental organization in animals, the limitations of some mental functions, the complete lack of certain capacities present in man, the antithesis between animal "instinct" and human "intelligence." In extreme instances we even find revivals of the old Cartesian theory that animals are purely reflex machines and are consequently wholly devoid of mind. Contrariwise the point of view which recognizes the continuity of all living beings from the protozoön to man refuses to allow any fundamental difference between animal and man, but believes only in sliding transitions and relationships; it therefore readily humanizes animals. It was but a short time ago that it was believed possible to develop in especially gifted horses that type of intelligence that is adapted to correct spelling and to the solving of complicated problems in arithmetic.

Psychological research with animals must therefore be first of all a *comparative* science (the name "comparative psychology" is sometimes used as synonymous with animal psychology). The comparisons must have reference both to the different kinds of animals and to similarities and differences between animals and man. Only through simultaneous considerations of agreements and variations may the right point of view become discoverable, and avoid the one-sidedness that we have just described.

III. PRACTICAL APPLICATIONS OF PSYCHOLOGY

I. PSYCHOLOGY AND LIFE

The penetration of every day life by science in general has long since come to be taken for granted by us; technology, the care of the

sick and the well, economic organization, are to a considerable extent instances of life become science. Their effectiveness, however, was primarily related to the external, material side of culture; only very recently was the question raised as to whether the *mental* activity that likewise accompanies cultural processes, might not also require reduction to science in serving human interests and super-personal cultural values. The question was answered in the affirmative¹ and today a generation of intensive and many-sided work in practical psychology lies behind us. In spite of this fact there is even now no complete clarity concerning the limits and the form of this undertaking. On the one hand there is the confident conviction that psychology possesses fundamental significance for all the varied domains of practical life; on the other, the opinion that the invasion by science of the inner circle of personal existence would be superfluous or even dangerous and reprehensible. Before taking sides in such a controversy, we must provide some brief orientation concerning the subject-matter and problems of this special field.

Today a distinction between "applied" and "practical" psychology is commonly made. The former is the *science* of psychological facts that are pertinent in making practical applications; the latter is the *art* and *technique* of the application itself.

Example: Applied psychology investigates the differences in intelligence of children and from its findings works out the best methods it can for the measurement of intelligence; the practical psychologist administers intelligence tests to children A, B, C by approved methods, in order to determine their progress in school.

The difference is not without significance since in recent times there has begun to develop a true profession of "practical psychologists" that is essentially different from that of the research psychologist.²

The classification of applied and practical psychology according to the *cultural spheres* in which they render service, is very common. Educational, medical, criminological, forensic, economic psychology and psychotechnics³ are most highly developed. The psychology of social service and of social problems has made rapid progress in recent

¹ In the author's prospectus, *Angewandte Psychologie* (1903), the definition and conception of such a scientific discipline were introduced for the first time.

² Thus some cities have added "school psychologists" to their school administrations. In vocational guidance clinics as in the personnel departments of industry, trade, and communications, there are those who test capacity, working and advertising conditions. In institutions for wayward children and adolescents consulting psychologists are active.

³ The term "Psychotechnics" was introduced in my 1903 prospectus mentioned above; but the word has meanwhile acquired a somewhat different shade of meaning. Today by "Psychotechnics" is understood the exact investigation and testing of men's capacities for work and of conditions of work from the point of view of their most effective application to economic and vocational life.

years. The beginnings of legal, political, and military psychology now exist. Special consideration of all these fields lies beyond the scope of this book.

2. LEADING PROBLEMS

We must, however, discuss the three leading problems that recur in every precinct of applied psychology; the problems of individuality, of group and social relationships, and of the objective conditions of cultural life. The first, which concerns the *nature of individuals*, is the one that is most widely noticed, cultivated, and debated. What would otherwise be left to common sense must in applied psychology be brought about by scientific means. This includes the determining of individual nature (either in its total make-up or in reference to specific capabilities and traits of character that are of practical importance), the prediction of its further development, and as a consequence of this, the influencing of further development through consultation, education, therapeutics, and correction.

Under this meaning of the term, practical psychology is applied: to pupils who are sent, on determination of their aptitudes, to special schools for retarded or advanced children; to the job-seeker, whose rating by the employment office is based on an aptitude test; to the criminal, whose characterial dispositions and motivations are studied by the judge in order to facilitate judgment of his case and the meting of suitable punishment; to the witness, whose trustworthiness is determined by psychological analysis; and to the neglected adolescent, whose educational program is regulated and controlled by intensive and continuous "case study."

It may be seen that the task of the practical psychologist is in contact at many points with that of medical advisers and experts, and even cuts across it. But *both* kinds of experts are necessary. In case of mental abnormality, to be sure, only the psychiatrist has competence. But even within the range of normality mental variations are so wide and mental complications are often so perplexing that their diagnosis and treatment in individual instances cannot be entrusted solely to the "common sense" of practical workers (teachers, judges, etc.), but require professional attention. This only the trained professional psychologist can give. The close working alliance of practical psychologists and physicians, which is to be found in the "psychological clinics" of the United States and to a lesser degree in other countries, is of course greatly to be desired.

The second problem involves the mental make-up of *social groups and communities*.

The educator is faced not merely with individual pupils, but with the societies within the school and the class, with cliques, friendships, and

enmities. In order to become equipped to deal with them pedagogically, he must discern the mental structure of the social organization (e.g., the differentiation of the class into leaders, camp followers, those who are led, outsiders). Furthermore, he must know the laws of socio-psychological functioning; suggestion, imitation, jealousy, rivalry, etc., and gauge and make use of them.

Similarly the criminologist is concerned with the phenomena of criminal families, gang formation, prison societies; the economist with the questions of mass labor, the spirit of the factory, class consciousness, the collective effect of advertising, etc. *Typological* groupings are also important in practical psychology, e.g., the construction of curricula for boys' and girls' schools, requires a differential consideration of sexual types.

Finally, applied and practical psychology are concerned with the investigation and treatment of *objective* data that are not of themselves psychological in nature but are closely connected with mental activity.

Under these belong, for example, the various external conditions of work in school and industry; the hours and distribution of work, pauses and holidays, piece- and hourly-rates, monotony or variety in work, amount accomplished and incentives to accomplishment, appoiment of work rooms, tools and machines (this is called "object-psychotechnics" in German), methods of training and apprenticing.

The significance of all such objective circumstances and measures is of course not confined merely to technology, economics, or pedagogy. They are interwoven with mental reactions, spontaneous actions and inner experiences, and on this account their most efficient organization is partly dependent on psychological factors.

Study of the *milieu* also belongs properly to the same enterprise. We must study with scientific methods how poverty, economic crises, unemployment, family disturbances, city, town, and country life, affect people mentally, in order to lessen the psychological disadvantages of a given milieu, to make the advantages of another milieu count for more, and to estimate accurately influences of the milieu through diagnosis, prognosis and the treatment of individuals and groups.

3. OBJECTIONS CONSIDERED

Applied and practical psychology constitute even now a *fact* of present-day culture that has sufficient momentum to survive attacks and criticisms. It is necessary, however, to go to the roots of the hostile views and to capitalize them by gleaning such reflections and self-corrective measures as may be necessary.

The attacks that are prompted solely by the immaturity of scientific psychology and by the novelty of its claims are of little importance. It

is the fate of *every* cultural advance that the adherents of traditional procedure cannot at first realize the value of the new procedure because they sense in it an infringement of their prerogatives and a threat against their practices. Their appeal is that results were *previously* obtained in education, in dealing with crime, in economic life, etc., without scientific psychology; why cannot further progress be made along the same lines?

The self-sufficiency of the practical man points to common sense appraisal of people which rests partly upon inborn gift and partly upon long practice, and does not need science; this, it is contended, is of far greater help in practical situations than are sophisticated theories. The teacher knows his pupils, the judge understands the defendants, the boss sees through the applicants, far better than some strange psychologist.

The appeal to naïve lay psychology is not in itself entirely unjustified; we indicated the need for it at the outset.¹ Even at that point, to be sure, it was imperative to emphasize the fact that the more complicated cultural relationships become and the more difficult it is, in consequence, to survey the personal and psychical factors that play a part in practical life, the less adequate are psychological intuition and practice in themselves. Scientific insight and scientifically sound methods therefore become necessary for *completing* and controlling common sense appraisal of people. Three requisites follow from this consideration: (1) that those having practical concerns be prepared to avail themselves, in appropriate cases, of the collaboration of the professional psychologist, (2) that the professional psychologist work in close alliance with these practical people, (3) that the professional psychologist recognize the necessity of connecting the two *in his own experience*.

Any consulting psychologist who believes it possible to *substitute* cut-and-dried tests for delicacy of feeling misses the point. For work in practical psychology is not merely a technique but also an artistic exercise. Whoever does not discover in himself a spark of this art should not attempt it. But where the spark is present it can be blown to a flame through scientific training in psychology, for psychological intuition is not a fixed quantity. The practical psychologist must thus excel the mere routine worker by reason of psychological knowledge that he has *assimilated* and that has therefore become a part of his understanding of people and of his treatment.

The practical psychologist faces further antagonism arising in quite another quarter, in the constantly increasing circle of *quacks* in the field of character reading, who without elementary training in psychology make a business of character analysis by capitalizing

¹ See p. 4.

some one special method. These mountebanks bear an analogous relation to psychologists that quacks in medicine bear to physicians. The simplicity and one-sidedness of their theories and the lack of restraint in their advertisements entice extensive followings; the homely diction and the usually flattering content—to the patron—of their character judgments, increase their commercial success.

Their technique is nearly always characteristically *monosymptomatic*; one brand will base its character readings solely on handwriting analysis, another on the form of the skull and features of the face, a third on the lines of the hand, and a fourth on the deflections of a galvanometer applied to the skull! (Bissky method.)

The activity of these character readers has of late greatly increased not only in scope but also in force, and consequently in its public danger. The readings formerly aimed for the most part at producing the agreeable sense of having a more or less plausible counterfeit of one's mind. But today such judgments are requested and furnished for very important purposes of life; employers use them as a basis for granting or refusing jobs; advisers on marriage and other affairs make use of them.

It may be perceived from this situation how strong the need for practical psychology is today, but at the same time, how little the enormous difficulties and the ethical responsibilities of the undertaking have as yet impressed the public. It is the business of the scientifically trained practical psychologist to bring about enlightenment on this score and to expose the harm and danger of amateurish character-reading and monosymptomatic one-sidedness.

We must not, to be sure, rest content with the mere negation of opposing views. Psychological quackery further resembles medical quackery in that it is capable of furnishing professional science on occasion with positive stimulation. There are character readers who bring to light by intuition psychological truths that science may afterwards be able to verify or elaborate. The one-sidedness involved in the use of one single interpretative procedure is even capable of developing a detailed technique that may attain the rank and utility of an auxiliary scientific method. In the field of graphology, e.g., the shifting over from an amateurish to a scientific discipline has already succeeded to a considerable extent; perhaps physiognomy and expressive movement will soon follow a similar path.

The professional practical psychologist must be on the lookout for and sympathetic toward these occurrences, and participate wholeheartedly in the adoption of the methods and points of view in so far as they are worthy. The only one that he must not appropriate is the monosymptomatic point of view. For to cling to *one* sole means of salvation is invariably the sign of narrowness and lack of exactitude.

A polysymptomatic elasticity of method, that is, the adaptation at any given time of a chosen method to the particular undertaking of the moment, must continue for him to be a basic requirement.

Finally there are a few fundamental objections to practical psychology that involve ethics and metaphysics. Curiously enough, two completely contrary conceptions are here encountered. According to one practical psychology does violence to the human mind in that it tears apart its unity, mechanizes life, reduces values to material forces. According to the other, practical psychology gives a disproportionate importance to mind and its individual peculiarities and modes of response, studies them for their own sake, overemphasizes them, when they should be organized into higher systems of purpose and value.

It is not the function of the present work to decide between these two contentions, for we are concerned not with ethics but with psychology. We may nevertheless draw *one* conclusion: The practical psychologist is not a pure scientist who pursues his investigations in accordance with his desire for knowledge without being led astray by incidental considerations of any sort. On the contrary he works *in the service of life*; he furnishes aid in the attainment of worthy aims, and the nature and bounds of his activity must be determined for him by estimation of the value of these aims. This ethical requirement of his calling is far more difficult for him than for the technologist who works only with lifeless matter. The "raw material"—if the term is permissible—of the practical psychologist is *man*, whose personal values must not be infringed. There are, for instance, intimate human concerns of religion, sex, etc., the investigation of which may be risked only with restraint and delicacy. The consulting psychologist, moreover, must take care, while engaged upon a commission of an employer, to separate the incompetent from the competent in such a way that unsuccessful applicants do not acquire the stigma of mental inferiority.

On the other hand consideration of the individual mind must not degenerate into a form of individualism that contradicts the *superpersonal* obligations of every human personality. The aims of society, of the nation, of a class, etc., may set bounds to the development of mental individuality that the practical psychologist must not overlook.

The practical psychologist has, then, a heavy responsibility to carry, in the interests both of his clients and the public welfare. A highly refined ethical sense is requisite to the discharge of his duties. Fortunately he will be supported by the progress of basic *theoretical* conceptions in psychology. Up to now his methods were determined to a great extent by the older elementaristic psychology; and so long

as analysis, experiment, and measurement remain for him the chief methodological points of view, the reproach that his scalpel is threatening the living totality of the individual is not so easy to disarm. The personalistic theory, on the contrary, supplies him with the leading thought of personal totality, and with this he can do justice to life and the worth of the person.

In spite, then, of the assaults from various quarters, it may be hoped that psychology in the future will further develop not only as a science but also as a practical cultural force.

CHAPTER III

MATERIAL AND METHODS OF PSYCHOLOGY

It is the nature of work in science not only to seek to *attain* knowledge, but also to give account of the pathways of progress toward this end. Such reflection upon *methods* is perhaps more necessary for psychology than for many another science because its manifold modes of procedure are beset with peculiar difficulties. There is hardly a psychological method the correctness and usefulness of which might not be contested in principle or in practice, while on the other hand there is a strong tendency to elevate some one method to the status of the sole means of salvation. Both acts, the proscribing of methods and the dictation of methods, are alike harmful to the progress of the science.

By becoming pledged to *one sole* methodology, one may easily become blind to the possibilities of other ways of investigating existing problems, and even to whole groups of problems.¹

For the pure experimental psychologist, those problems that evade experimental treatment do not exist. The behaviorist shuts himself off on principle from all insights yielded by introspection. The methodological fanatic in psychoanalysis no longer takes any direct interest in conscious phenomena as such; to him they are but material for his methods of interpretation, the goal of which is the unconscious.

Methods do not exist for their own sake but grow out of the exigencies of problems and out of the possibilities of the material. The relation of methods to the tasks and problems was treated in the first two chapters. Here psychological methods will be examined with respect to the *material*; our inquiry concerns the auxiliary *means* through which psychology fashions its material into scientific findings.

I. COMPREHENSION OF ONESELF AND OF OTHERS

I. THE COMPREHENSION OF ONESELF

Every person knows for himself alone *how* any feeling, e.g., grief, anxiety, is *immediately* experienced. He likewise knows how thoughts arise and become linked with one another, or how mental items leading

¹ The day is long past when Wundt was able to maintain that there existed but two methods; that of experimental psychology and that of folk psychology.

to some act of will (impulses, deliberations, doubts, conflicts of motives, decisions, etc.), appear as facts of mind. In other words, in so far as psychology is concerned with conscious contents and processes, it requires a method that is directed from within, for only such a method wins to the immediate actuality of the object sought.

The term "self-observation" was formerly applied to this method, but that is much too narrow. If we speak of "self-comprehension" or "introspection" *all* modes of procedure directed upon one's own self are designated. "Observation" is always directed toward a datum now *present*; and the word "self-observation" ought to be used only in this strict sense. There have been theories that saw in self-observation the sole method of psychology, on the ground that psychology has no task other than description of mind as an immediate fact of one's own experience. There have been other doctrines that sought to exclude self-observation completely because of the alleged absurdity in believing that one individual could at the same time be both observer and subject of observation. Both views are erroneous.

Let us begin with the second assertion, which declares the separation to be impossible. *All* observation is a dual process. I the observer direct myself as a personal whole upon the object of observation. Such an object may be both "out there" or "in me"; it takes only a slight turning of the attention to shift from one to the other.

For example, I hold my watch to my ear and listen to its ticking. If I do this because it tells time poorly and I wish to determine whether its movement is irregular, I am pursuing "external observation." But if I do it in order to learn that I can no longer hear it at a certain distance from my ear, or that I can hear and not hear it alternately, the observation is then directed upon *my* sensitivity to sound, *my* fluctuations of attention. If next I endeavor to produce in the hearing of the ticking now a three-part, now a four-part rhythm, by contriving each time to hear the first beat louder than the rest, the object of observation is *my* sense of rhythm, its flexibility, its effect on the periodicity of perception. Thus in all but the first instance I have to do with self-comprehension, and in fine, with self-observation in the true sense; for I am comprehending mental activity *while* it is present and in progress.

Let us now take a second example. I am in the course of deciding whether or not I *want* to execute some action (e.g., undertake a journey). The process extends over a lengthy period of time; at various instants new motives for or against arise; times when I am firmly decided alternate with periods of renewed wavering. It is manifest, to be sure, that at those instants when I am occupied with an inner experience of volition, I cannot *at the same time* observe it, for my exertions are just then fully taken up with wishes, impulses,

and doubts, and hold no room for detached contemplation. But I do not continue to dally over such culmination points. The process has its residual and intermediate phases in which while not vanishing entirely from consciousness, it yet fails to demand full concentration. In such instants that which is taking place internally may be *caught* and momentarily held as an object of regard. It is still sufficiently alive to be comprehended in its peculiar essence, and at the same time sufficiently passive to come under the control of the observational process.

Whether this is called by preference "self-observation" or "self-remembrance" is of little consequence for the activity itself. Today we know that the psychical "present" embraces not only an *instant* of time but an *extent* of time as well. On this account something that has just been present can be discerned within the apprehension of what is actually present.

It is but a brief step from this to the introspection of a strong emotion. So long as I remain angry, or intoxicated with aesthetic enjoyment, I am doubtless in no position to observe my wrath or enthusiasm. The objective attitude of observing would at once annihilate the emotion itself. For this very reason this is the favorite example for those who are opposed on principle to the introspective method. But they overlook the fundamental significance of *primary self-remembrance* (called "primary" because it succeeds the experience without an interval). After a state of anger has just evaporated the question may be asked: What was it? What took place within me? The circumstance that there are still echoes of the original situation makes this act of recollection far easier; the corresponding feelings are still present even though simply as remnants deprived of their force; the recently experienced narrowing down of imagery, the lack of deliberation, the inner impulse toward meaningless movements, continue active in one way or another by virtue of the contrast between them and the quieter composure now setting in. In the vast majority of cases in which "self-observation" was invoked by the older psychology this primary self-remembrance was involved.

We have some knowledge of the content of our *dreams* chiefly because we are able to lay hold of a corner of the transient veil immediately upon waking from a dream. It is usually but a small corner; we at once have the feeling that we dreamed much more than we now have knowledge of, and far more confusedly than we are able to express in words. But in spite of the deficiency, this is *relatively* the best record of the dream, inasmuch as later on, say in the afternoon of the same day, there is no longer any genuine remembrance of the dream; the report that we then render is at best a secondary recapitulation of the primary remembrance of the dream.

A few decades ago Külpe introduced into the psychology of thought a technique that he and his (Würzburg) school called the method of "systematic introspection"¹ although it really uses primary self-remembrance. Certain thought-provoking material (maxims, riddles, etc.) is given to the subjects; immediately *after* the task of thinking has been solved they are to state what processes and contents have been present in their consciousness at the time.

The next stage in self-comprehension is still further removed from true self-observation; this is *secondary self-remembrance*. It embraces mental experiences and states that are clearly separate, temporally and qualitatively, from the present condition and situation of the self, and is thus a *re-activating* of what is absorbed in past time. Psychology is also interested in such remembrance, for psychological investigations often have as their topic mental situations or conditions that are not actual at the moment but were significant in the past.

Examples of such topics are: the effects upon the mind of unusual occurrences (a mournful event, a serious illness, a conflagration, a political mass movement), and "first experiences" (such as the first lie, the beginnings of sexual feeling, the awakening of religious interest).

Such backward-reaching introspection is surely possible. But it is much more difficult to achieve and of more doubtful value than the introspective methods previously mentioned. For as a medium of knowledge remembrance is generally very questionable²; if this is true of the re-presentation of objective items of the past, how much more so of the remembrance of their subtle emotional and ideational effects. In making use of this procedure the psychologist must therefore be governed by extreme caution.

The difficulty is increased when self-remembrance is directed upon phases of one's life that are long since *outgrown*, e.g., upon childhood. The way in which the individual experienced himself and the world when a child was so fully conditioned at that time by his total personal structure that in later decades he can still recall this or that fragment of mental experience, but no longer the significance that this fragment within his childhood personality possessed at the time. A great deal must be formed and colored anew.

For example, the method of psychoanalysis, which is especially given to working with childhood remembrances by adults, has not always avoided this danger. When a thirty-year-old neurotic case regards certain sexual disturbances in the present as remnants of infantile experiences, there is no determining any longer how much of his mental life as an adult he is projecting into those apparently "remembered" childhood impressions.

¹ In German: *Selbstbeobachtung*.

² Cf. p. 256.

A very important limitation of method, which bears on all the forms of self-comprehension, consists in the persistent necessity of making things *conscious*. Either that which was conscious in the original experience becomes held and recorded, or that which was originally unconscious is afterward brought into consciousness.

In the first case self-comprehension is restricted *at the outset* to those portions of mind that extend into the focus of consciousness and are sufficiently clear to be captured; and the product must then be *fragmentary*. In consequence a negative statement can best be formulated, e.g.: "I do not find such-and-such in my consciousness"; *but not*: "such-and-such had no effect upon my mind." For at times highly influential impulses may be active on a level not accessible to one's own scrutiny. If this fact is not reckoned with, deception is possible in regard to one's own motives.

In the second case the attempt is made to bring such unconscious moments into consciousness *subsequently* that they may be comprehended by introspection. But this is an operation that cannot occur without *alteration* of the facts. The thought or emotion that is made conscious is no longer identical with that condition or attitude that was embedded in an undifferentiated form in the deeper regions of the whole person. When life is changed artificially into experience much of its original quality is subtracted from it. This limitation of the introspective method must be recognized above all in depth psychology, the technique in which consists in essence of "making the unconscious conscious."

Penetration to what lies beneath consciousness may, however, result in a quite different formulation in the final stage of self-comprehension. This is *self-characterizing*. Here the question is no longer one of definite facts of mind, either present or past, conscious or unconscious, but that of consistent personal factors that form the permanent background and source of all happenstances. Such self-judgment is epitomized in the famous maxim of the delphic oracle, "know thyself." It has, however, a further signification that makes this mode of knowledge far more difficult to use for psychological purposes, and that is self-reflection considered as self-education.

Self-characterization is almost never a bare statement of the kind that science demands, but an activity that is strongly influenced by *value*. Those features are sought—and found—in the self that make for the desired affirmation of the self, its justification to oneself and to others, and the vindication of one's established aims. Or those characteristics are sought—and found—that are rejected in order to overcome them, their abolition being desirable for the purpose of changing the self. This all but indissoluble connection between self-characterization, a sense of personal value, and the active shaping of the self,

causes the individual's mental image of himself to appear in one-sided perspective, and makes of it a portrayal of aspiration or condemnation. It takes the exceedingly uncommon art of self-objectification to prevent the displaced perspective from becoming a distortion. Self-characterization therefore furnishes psychology more with an extremely fascinating problem than with a useful method for solving other problems.

2. THE COMPREHENSION OF OTHER MINDS IN GENERAL

Introspection cannot be the psychologist's sole method because it yields nothing but a *singular* finding, the mental life of his own individual nature. It remains an open question, to what extent a glimpse thus obtained is purely individual, or applies to a type or to the general run of human beings. But the psychologist's inquiries seek universal laws, and aim at the comprehension of types, natures, and age groups that differ from his personal make-up. He must therefore find some entrance into the mental life of other beings.

Here a new methodological difficulty appears. In what way is mind in others *given* to us empirically? The answer at first sounds discouraging. Mind is never given to us directly but only through the medium of physical manifestations that we are able to perceive. If this answer were a wholly accurate statement, mind in others would be accessible to us only through *analogies* of the following form: In myself I know both mental experience (e.g., a feeling of anxiety) and visible manifestations (trembling, paling, flight movements, etc.); in others I see but one component, the bodily expression, and from it I conclude that this likewise corresponds to an inner feeling of anxiety as in myself.

According to this hypothesis mind in others is always something that is merely *to be inferred* but never experienced, and it is inferrable only in so far as it *agrees* with my own mental activity; for it is solely a projection of this activity into the corresponding modes of expression of the other person. Hence at bottom each individual's psychological knowledge would be limited to his own mind, and the orbit of his thinking would be closed.

Fortunately these assertions are incorrect. (1) They assume that the individual whom I wish to comprehend psychologically contains two *separate* components, one of which (the corporeal) I comprehend immediately, the other (the mental) meditately. But fundamentally there is no duality; rather is there unity, comprising the psycho-physically neutral, personal life. This may be comprehended by some suitable method of embracing both expression and intimate consciousness in their fused form; by an understanding (*Verstehen*) of the person's whole bearing *inclusive of* the conscious quality lodged within

it. The facial expression, gestures, actions and speech of X are not, for me who is understanding him, *the* initial data of visual and auditory perception that are registered by themselves, and from which I then proceed "by inference" to the inner mental components of X. On the contrary, I see grief immediately in the sad play of expression, I hear expectancy in the sound of the words; the mental component is present for me as concretely and concomitantly as the bodily component.

Some notion has already been given of this *intuitive* comprehension of the mind of others¹; it constitutes the indispensable foundation for all psychological study of other people. To be sure, it can never be more than a *foundation*. For it embraces only the broad and vague outlines and the total coloration of another's mental make-up; just as soon as specialized investigation is entered upon it becomes inadequate and must constantly be supplemented by interpretative inference. Both methods continue to support each other. Immediate understanding needs to be verified and controlled, and under some circumstances its results require correction, by the "discursive" procedure. Since this procedure involves identifying physical manifestations as "indices" of mental activity, it must seek to lessen the ambiguity of such indices by means of intuitive understanding.

(2) In the further statement that the inferring and identification of other minds can take place only by *analogy with one's own self*, analogy must not be substituted for equivalence. If I, the inquiring psychologist, were able to comprehend psychologically only those others who have the *same* mental experiences as I, and who have these in the same quality, then my access to other minds would be seriously curtailed; for no person is exactly like another. One person may nevertheless be *similar* to another to a greater or lesser degree, and it is precisely of this similarity that our comprehension consists.

Human personality is in no sense a rigid entity that has a single fixed aspect from all sides and is locked up in its individual state of being as in a jail; on the contrary its content is always ambiguous in meaning, stratified, possessed of a wide margin. In each individual the scope of potentialities is more extensive than is his actual condition at any given time; he must make these potentialities resonant whenever he wishes to comprehend the mind of another. How would the psychologist be able to engage in psychological study, now of the criminal, now of the artist, now of the child or the primitive, if some quality of each were not present in himself, albeit in a vestigial and dispositional form? The eidetic consciousness is not entirely hidden from the person who is not eidetic, nor is appreciation of music hidden

¹ Cf. p. 4. For an exposition of *prae-interpretatorial* understanding, see *Studien zur Personwissenschaft*, p. 71.

from the unmusical person. The individual is never merely a fragment of the universe but a microcosm related to everyone else.¹

The ability of the investigator to transcend the narrow restrictions imposed by self in the manner indicated is distributed in widely varying degrees; whoever possesses it in meagre measure will not make a good psychologist. A great many people look upon their own limited self as being obviously the "*normal*" mind, and classify other people according to this norm. That which is unfamiliar is thus either generally not understood, is regarded as abnormal, or is violently misrepresented through some analogy. Such an attitude is surely inborn and unalterable to a certain extent, but to some degree it is simply the result of a lack of psychological insight and cultivation; psychological training may in this case have the effect of broadening the horizon. If only for the sake of its *educational* value psychology should be included in the vocational training of anyone who as teacher, judge, or physician, etc., must later understand and deal with the minds of others.

The second limitation applies to the person being investigated; the less he is like the psychologist who examines him the more difficult it naturally is to comprehend him by analogy. It is correctly asserted that the male psychologist can never entirely understand essential features of the feminine mind, simply because he is a man. And a musically inclined psychologist is surely better able to study musical capacity in others than is an unmusical one. It was mentioned earlier that the difficulties resulting from increasing strangeness and dissimilarity are more frequent in the psychological study of infants, primitive people, and animals. That axiomatic principle of method, "the simple is easier to master scientifically than the complex," which is true in all other sciences, does not hold in psychology; for the more simple minds are particularly remote from and alien to the psychologist, since he is a complex, mature, civilized being.

Even the limitation imposed by dissimilarity is nevertheless not absolute. The development of child and animal psychology has plainly demonstrated the ability of the psychologist to feel his way slowly and cautiously, to his profit, through the enigmas of these worlds so remote from his own.

II. OBSERVATION OF NATURAL BEHAVIOR

I. GENERAL REMARKS

So long as the individual who is being studied psychologically is not induced to react "artificially" (as happens in experiments) we call his behavior "natural." Behavior is "reactive" when it appears

¹ Cf. *Differentielle Psychologie*, p. 567.

to take place in response to definite influences belonging to the natural scheme of life (influences of family, school, accidents, an aesthetic impression, an acquaintanceship, an historical event, etc.); it is "spontaneous" when it is essentially determined by forces operating within the person (play, leisure activity, the awakening of religious, artistic, and vocational interests).¹

Natural responses and spontaneous actions are to a considerable extent open to observation by others. Up to a few decades ago psychology had for the most part no other sources of knowledge besides introspection, except a casual comprehension and interpretation of every day actions and events, home and school, public activities, and institutions. When experimentation was introduced half a century ago as a psychological method, many believed that it was going to supplant these less exact observational techniques. This was a misapprehension. For empirical observation has two advantages that assure it a lasting place in science, even alongside of experimentation. It is *closer to life* than experimentation; the mental processes which it seeks to comprehend are knitted in a far more organic way into the total activity of the personality than are the items accessible in the experimental setting. Moreover the *spontaneous* operation of personal forces is open to observation, while experiments are always directed toward reactions. For example, the incidence of religious experience in adolescents may at most be observed, but may never be determined experimentally. *Unexpected* mental phenomena are also open to observation, while experiments must be confined at the outset to expected responses. In recent years, when psychology became directed upon cultural problems, the method of observation had to be granted its former privileges.

This method then became scientific. The psychologist has learned to "see" things very differently, approaching the objects of observation with a changed attitude, seeking to *systematize* his observations and making them *comparable* with one another.

2. SYSTEMATIC METHODS OF OBSERVATION

a. *Psychography.* By this method certain points of view under which observations must be made are previously decided upon, and the results of observation are then entered under their several headings upon prepared blanks or "observation charts." The sum of entries for a given individual constitutes his "psychograph."

The observation chart may first of all serve the observer as a very necessary Ariadne's thread to lead him through the chaos of possible observations. The observations made by many observers of many

¹ For the relation between the reactive and spontaneous modes of behavior see p. 89.

persons with the aid of the blank may then be compared with one another and elaborated into more generalized results.

Instructions for making observations are especially needed wherever persons who are not psychologists by profession must compile their observations for use by others; thus it happens that psychographs play an important part in educational institutions, etc.

The psychographic method has been subjected to manifold criticisms. The danger is pointed out, not altogether unjustly, that the "psychograph" threatens to resolve the individual into a mosaic of arbitrary items and thereby to obstruct the view of the natural total structure of the personality being described. On this account what are called "free characterizations" are often demanded in place of completed psychographs, and teachers armed with these seek to develop the individuality of each pupil from his individual core of personality. If only such an undertaking did not greatly exceed the ability of most teachers! Of late a synthesis has been attempted; the observational instructions are so transposed in order as to indicate the items of probable importance while allowing space within this framework for the free descriptions.

b. *Case study* is the description, collection, and utilization of concrete *cases*. Certain practical disciplines, medicine above all, but also criminology, pedagogy and welfare work, are far in advance of psychology in the development of this method. This is natural enough. For in discharging their duties practical workers are primarily concerned with individual cases; with sick people, lawbreakers, pupils. Individual treatment requires above all else an insight into the special constitution and condition of every single "case." The method then may lead to generalizations, hypotheses and theories.

It is otherwise with the psychologist. As a theorist he begins with *problems*; cases from real life come into consideration for actual treatment only as illustrative examples or items for comparison. For a long time there was hesitation in making more effective use of them because the "cases" seemed, in their closeness to life and in their entanglement with particular situations, too complex and too difficult to appraise.

The necessity for using case studies became incontrovertible only when the psychologist himself went over from theory to practice. Within his own sphere of activity there were now actual "cases": children whose education and progress at school were at issue, criminals and witnesses who had to be examined, individuals selecting vocations whose aptitudes had to be determined, etc. The available resources of psychological case collections are still relatively small; augmentations which will enable the psychologist to draw upon this

store of experience whenever opportunity is presented, are badly needed.

c. *Observation of development.* If mental phenomena are observed and recorded throughout a certain period of life without serious break, there is an opportunity to demonstrate the internal continuity of mental growth and maturing: the formation and termination of certain states, the abruptness or gradualness of changes.

The use of this sort of observation is likewise well known in medicine, as when a psychiatrist follows the course of a mental disease in a clinical case and supplements whatever he cannot directly observe with the case history and the "follow-up."

The method occurs in psychology chiefly in connection with development in *children*. Parents are in a good position to observe a growing child over a period of time. To this end diaries have been kept following mental development year by year. Recently long-time follow-up observations have been begun in Kindergartens and other institutions. Sometimes the method traces mental development in general. Sometimes it is limited to definite special problems like the development of speech or play behavior, of social behavior, etc.

III. EXACT METHODS

I. EXPERIMENTATION AND MEASUREMENT

In Goethe's *Farbenlehre* there is a markedly psychological chapter "on the sensory and moral effect of colors." There Goethe mentions in passing the manner in which impressive effects of colored light may be obtained. Let a colored glass be held before the eyes; the whole field of vision is plunged into the given color which influences the mood of the person who is looking.

This example should show that there were "psychological experiments" long before "experimental psychology" existed. The latter first made its appearance when the experimental method, which had proved itself in physics and physiology, was applied *systematically* to psychological problems, *measurement* being undertaken with its assistance; finally both experimentation and measurement were adapted to the special needs of psychology.

Fechner and Wundt were the pioneers in experimental psychology. Two generations of psychologists in all civilized countries, especially Germany and the United States, have developed the methods, which are now in use in countless institutes, laboratories, clinics, and guidance centers.

The fact that at the present time other techniques have established their status alongside experimentation does not betoken any retreat

whatever on the part of the experimental method; on the contrary we are still able to say that the range of psychological problems open to experimental treatment is constantly increasing.

In any scientific experiment the phenomenon being studied is brought about deliberately in a form that is as open as possible to observation. The investigator does not wait until the phenomenon in which he is interested is accidentally provided, but elicits it *at the very moment* it is desired. Moreover he does not allow it to occur in the state in which chance happens to present it, but arranges *experimental conditions* that tend to isolate the object distinctly and plainly from everything else that is not relevant at that moment.

These methodological principles, which hold for any experiment, apply without modification to *psychological* problems. We may select as an illustrative example a technique that has become classical in the history of our science, the method invented by Ebbinghaus fifty years ago for the experimental investigation of rote memory.

Memorizing is of course accessible to casual observation. There are many people—school children, competitors in examinations, actors—in whom we come across feats of memorizing. What grounds are offered for treating the problem *experimentally*?

(1) In ordinary memorizing rote and logical learning are not distinct. In order to assure to the greatest possible extent pure rote memorizing, the material has to be arranged in a form that excludes logical learning. Ebbinghaus therefore made up “nonsense” syllables that he could combine at will into series to be learned.

(2) But even such meaningless syllables involved varying degrees of difficulty in learning, according to their construction; this inequality, which would have produced inconclusive results, had to be remedied. Just as the chemist does not work with ordinary tap water which is rendered impure by some foreign substance or other, but with distilled water, the material to be learned had to be “distilled” in this instance, i.e., made equivalent in all its parts. Ebbinghaus constructed his syllables so that each consisted of just three sounds, consonant, vowel, consonant; all syllables that sounded like existing words were excluded.

(3) Such exact and uniform material permits of precise *quantitative* gradation; the length of the series to be learned, the number of readings required for learning, the time needed for learning, the interval between learning and the testing of retention—these and many other items are expressible as quantities.

(4) In order to exclude variable conditions in the situation and in personal disposition, the experiment is repeated under *the most identical conditions obtainable*; always at the same time of day, only when the subjects are in good health and not fatigued. (This is modified of course, if such conditions are themselves regarded as the problem, as for instance when what is investigated is variation in learning capacity during the course of a day.)

(5) Experiments arranged in such a precise form may be *repeated* with considerable exactitude on other occasions by other experimenters and with other subjects. Identity of method is thus established among research workers, and this may, to an extent hitherto unsuspected, entail identity of problems and of working interests. This also permits the checking of results obtained by any one individual worker, whereas self-observation by the individual formerly yielded conclusions from which there could be no appeal.

What we have illustrated by a single example is true of psychological experiments generally, it being understood, of course, that different factors may acquire different emphasis. An important development has proceeded since the classical period of experimental psychology (which had its climax in the last quarter of the nineteenth century). While at that time physics was the model that set the specifications in its insistence upon unambiguous, strict, and exact measurement, in the period that followed it was recognized that this demand may be satisfied only with lifeless material, and that it must be considerably moderated in carrying it over from the physical world into personal life. For organisms, and in particular, mind, never possess the isolation, simplicity, and commensurability of physical and chemical objects; mind is and continues to be ambiguous, labile, and mobile by virtue of belonging to the total person. This is all the more true the more deeply the mental process is embedded in that totality. Maximal exactness can therefore be purchased only at the price of *depersonalizing* the mind under investigation, of cutting off the meaningful relation that makes it what it is.

In spite of this fact it would be absurd to give up the accomplishments of experimentation. It proved far more worth while to reorganize the method so that the dangers were diminished and the advantages thrown into relief. This was brought about in various ways.

To begin with, experimentation had to be rescued from its isolated position as a method and fitted into a more comprehensive scheme as an *auxiliary technique*. Through years of laborious special application, experimentation has gradually become an implement that does not rule the psychologist but is controlled by him. It may now be combined with other procedures in the form required wherever the situation demands it; now in order to increase the yield of introspection or to stimulate self-remembrance; now for the purpose of verifying estimates of aptitude; now to confirm some theoretical hypothesis; now to supplement offhand observations by checking them afterward, etc.

The form of the experiments gradually changed, especially with respect to the criterion of "*exactness*." The more exact the design of an experiment, the more consistently it elicits a *mere "reaction"* of the subject, a forced response to a constraining stimulus. Since the indi-

vidual, even while reacting, continues to be a spontaneous personality, it becomes necessary to try to discover the "spontaneity within reactivity" in the experiment. Instructions that allow more free play were therefore devised; according to them the subject must meet the ambiguity of the instructions with some spontaneously *selective* action. Here "selection" signifies both conscious choice and the wholly unconscious disposition of inner forces.

This scale of examples illustrates the various degrees of spontaneity: the aesthetic comparison of colors where judgments of pleasantness are to be made; combination experiments in which three given words must be arranged by the subject so as to make sense; composition experiments in which only the theme (e.g., "How I regard my future vocation") is suggested, while the content is spontaneous.

This reconsideration of ideal precision by modern psychology also involves the question of *measurement*. Today we cannot feel the same intense excitement that was called forth seventy years ago by Fechner's contention that mind could be "measured." At that time Fechner and his followers deemed it possible to apply *physical* principles of measurement directly to the mind, and thereby to bring it under natural law. For their part, critics within philosophy and cultural science were afraid lest mind become irreparably mechanized or even annihilated as soon as measurement and calculation were applied.

Today we view the matter more temperately. Many mental processes can be computed and graded; such formulations and expressions of relationship no more destroy the quality of mental activity than taking temperatures or blood-counts destroys the unity of the organism, or statistics on crime and population affect the life of state and society. The only proviso is that the figures be not regarded as ends in themselves or as complete descriptions of mind; otherwise psychology would certainly do violence to its own data.

To be sure there has been and there still is exaggerated faith in the power of numbers. For example, an "intelligence quotient" may be of provisional value as a first crude approximation when the mental level of an individual is sought; but whoever imagines that in determining this quantity he has summed up "the" intelligence of an individual once and for all, so that he may dispense with the more intensive qualitative study, leaves off where psychology should begin.

The application of mathematics to psychology has shifted in recent years more and more from evaluation by absolute "measurement" to evaluation by "rank order" and "frequency."

Quantitative *measures* bring about the coördination of a specific mental event with a point on a permanent quantitative scale and

reduce the relation between several mental events to a specific formula similar to formulae for natural laws in physics.¹ There are no *rank orders* in physics as in the practical affairs of life (school grades, scores of athletic feats). In working today with "rank orders in intelligence," "rank orders of social value," etc., psychology departs from the mathematics of natural science.

This is still more manifest in the case of *frequency* values. For this conception the method of cultural science, statistics, is the model. Such quantitative specifications do not apply to individuals, but to the *distribution* of mental qualities among groups. One may determine, for example, the frequency with which certain grades of intelligence occur among a large number of school children; the result is portrayed by a "distribution curve." Or one may investigate the relationship between two of these ranges of distribution; thus if the scores of 1000 individuals have been determined on both theoretical and practical tasks involving intelligence, a statistical value indicating higher or lower *correlation* of the two kinds of scores may then be calculated.

If such numerical values are now abstracted and assigned to single individuals, they signify merely a probability of a mental condition, but not its absolute certainty. Keeping this above example, even when there is a high statistical correlation between scores for theoretical and practical intelligence, it does not signify that the two levels of accomplishment are necessarily close for a *single* individual included among those tested. Statistical quantities are by their nature only probabilities which allow abundant room for spontaneity and individuality.

Closely connected with the adoption of statistics is the *extension* of psychological experimentation. In the earliest period of experimental psychology investigations were designed primarily for intensive work of narrow scope. They were conducted with a relatively small number of subjects (usually students), but with sessions of several hours' duration recurring for weeks at a time. For many problems, especially theoretical problems, this intensive procedure will always be necessary. But other problems demand a considerable extension of the basis of investigation. Determinations of frequency and correlation, type studies, comparisons of groups or age levels, etc., may be made only with larger numbers of people. Such extensive experiments cannot of course demand of single individuals the same intensive application; this would overburden the psychologist and limit the time available for the persons taking part.

Short experiments have thus been developed, which may be per-

¹ Classical physics is meant here. The method of modern physics is now undergoing a remarkable change, which is not altogether unlike that described above in psychology; it is using statistical determinations of probability instead of constant functional relationships.

formed with many individuals from different populations with the aid of relatively simple portable equipment. The results serve as samples, i.e., as indications or "symptoms" of more extensive mental qualities. This method of psychological *testing*, which originated in the United States, has circulated throughout the civilized world. It is closer to life, more easy to apply, and more adaptable than the precision experiments of classical psychology. But its utility is questionable; for the tests, apparently so simple, lend themselves readily to use by dilettantes, and to extravagant conclusions that they are not properly able to sustain. Occasional exaggeration and misuse aroused hostility. This is regrettable, since tests, when used cautiously and critically, may perform a wide variety of services in the interests of educational, economic, psychiatric, and forensic problems.

Tests are used in two ways. As *research* experiments they produce general and comparative results for large groups; as *examining* experiments they are the means of diagnosing individuality. A test may afford a reliable appraisal of an individual only when his "symptom value" has previously been ascertained by extensive and careful experimentation.

2. PRINCIPAL KINDS OF PSYCHOLOGICAL EXPERIMENTATION

We shall present a survey of the *chief forms* of the experimental method and include examples regarding the applicability of measurement.

a. *Reaction experiments* in the narrow sense: The object of study is the sum total of processes that bring about an appropriate response to an external stimulus.

The stimuli may consist of simple sense impressions, pictures, figures, words spoken aloud or visually presented; the response, of a simple movement (e.g., pressing a key), of saying another word, of executing an action. Simple and multiple choice responses are studied. Reaction times are measured, the frequency of right and wrong responses is counted, conscious processes accompanying a response are analyzed, the relation between speed of reaction and mode of response under varied external and internal conditions is investigated. Certain psychological doctrines, above all behaviorism, regard the reaction method as the only possible form of psychological experimentation.

There is a close connection between reaction experiments and various other scientific and practical interests. Though apparently remote from psychology, astronomy gave reaction experiments their first impetus nearly 100 years ago. It was observed with astonishment that in recording the times of stellar transits, different observers varied noticeably from one another. The mystery was solved psychologically. The variations depended on differences in individual speed when the astrono-

mers responded to the visual stimulus appearing in the telescope. ("Personal equation.")

In modern applied psychology the reaction experiment is an integral part of a number of aptitude tests; in driving vehicles, cranes, or other machines, the speed and dexterity of response to changing stimuli is of crucial importance.

b. Impression experiments are concerned with the formation and character of sense perceptions.

This was the chief topic of physiological psychology. In the beginning (Johannes Müller, Helmholtz, Fechner, Wundt, etc.) this field was primarily concerned with analyzing perceptions into their mental elements, constructing complex perceptual patterns out of these elements, and correlating perceptions with physiological processes and physical qualities of the stimulus.

Modern experiments in perception seek an immediate approach to the *experiential* quality of perceptions, and study the laws and individual differences of the experiences. Topics like the perception of Gestalt, eidetic imagery, stages of objectification, cannot be dealt with without the aid of experimentation. But the older problems have by no means been exhausted, and they continue to concern experimental psychologists.

The outstanding unit of measurement in the psychology of perception was originally the "difference limen," i.e., the separation of two stimuli that makes them just noticeably different (Fechner, Wundt, Georg Elias Müller). Now the measurement of thresholds has become a device of great utility in a wide variety of investigations in the psychology of perception; at the same time there remain other opportunities for mathematical treatment, such as the measurement of the frequency with which judgments in perception (like, unlike, pleasant, unpleasant) occur.

c. Methods of expression. The problem is: Through what bodily states and processes are inner experiences manifested?

Experiments of this type can embrace both the physical and the mental component of the process. States of mind are produced artificially; fright, pain, aesthetic pleasure, strain of attention; and the concomitant changes in certain bodily functions, like breathing, pulse, trembling, writing movements, etc., are registered by delicate recording apparatus. In other cases forms of expression occurring when mental activity is not artificial are investigated experimentally, as when the normal degree of pressure, speed, etc., are made use of in studying handwriting, or when natural changes of feature and gesture are subjected to photographic analysis and recording by the cinema. Among other items susceptible to measurement are amplitude, rapidity, and rhythm of movements, intensity of pressure, proportions and angles in expressive poses.

d. Methods of self-comprehension. Experimentation here is involved merely as a means of producing specific states of mind in order to facilitate self-observation and record-taking.

In this class belong the so-called "imaginary experiments" (*Gedankenexperimente*), in which the psychologist is his own experimental subject. He places himself in certain imaginary situations and attempts to give an account of the accompanying conscious processes. In other subjects trains of thought, acts of will, feeling-responses, are evoked experimentally for the same purpose; the subjects must each time report at once through primary self-remembrance exactly what took place in their consciousness.¹ Quantitative determinations play only an incidental part in the recording of personal experiences (and here again in the form of statistical measurement).

e. *Methods of performance.* A "performance" is a constructive action that may be scored in terms of an objective goal. Through performances the person adjusts intelligently to the requirements of the objective world. The investigation of performance is psychological whenever a problem is raised by the mental phenomena and dispositions involved.²

Experiment here may take its departure in the mental sphere, as in the investigation of rote learning, as in recollection in witnesses' testimony, or attention during protracted tasks, or intelligence in processes of thinking. Or one may commence with the objective side of performance; performance of calculation, technological performance, artistic performance; where the mental processes and talents involved are identified by analysis.

Quantity and quality may be measured in any performance. The quantity is determined from the relation between accomplishment and time spent, the quality from the closeness of approximation to the ideal norm of proficiency. Wherever it is possible to judge the individual elements in performance under the rubric right-wrong, the number of errors may be used as the measure of quality; in other cases, e.g., in compositions, one must be satisfied with estimates of the goodness of performance.

IV. INDIRECT METHODS

So long as the psychologist concentrates on immediate contact with the mental life of others, the number of available persons necessarily remains limited. The extension of the scope of psychology has burst these bonds and made people who were remote in space and time also accessible to investigation. *Indirect* methods have been developed for this purpose.

I. QUESTIONNAIRES

The *questionnaire* method (*enquête*) is akin to experimentation. The psychologist draws up a list of questions and specifies how they are

¹ Cf. the remarks on the "Würzburg School" and on the limitations of introspection, pp. 48-50.

² On the problem of "performance" see Chap. XXV.

to be answered; the list may be circulated by mail, the press, or radio. Usually only a fraction of the persons addressed bother to reply; the sheets that they fill in constitute the returns, which are subjected to psychological treatment.

In individual instances there are numerous variations upon which the usefulness of the method may depend. It is a far cry from the pioneer efforts, crude and imperfect, with which the method began in the United States (G. Stanley Hall), to the oftentimes highly refined questionnaires of modern psychology.

At the present time questionnaires are submitted ordinarily only to definite *classes* of respondents, for only then is there any assurance of the common level of cultivation, of interests, and of verbal expression demanded by the requirement that the results be comparable.

Examples: In a Dutch questionnaire study (made by Heymans and Wiersma) *physicians* were requested to check lists of traits of the older and younger generations in families well known to them; this inquiry promoted the investigation of mental inheritance. In a German questionnaire (by E. Knoblauch) *women students* were interrogated concerning their mental attitude toward study, careers, and marriage.

We have learned moreover how to get at the minds of the respondents. Psychological questionnaires often make unusual demands of them. The respondent must rightly understand the meaning of the questions; he must overcome his natural reluctance to disclose his inner thoughts; he must possess the good will, the objectivity, and the facility of expression needed for describing certain facts about his mental life.

On this account the *preparation* of a psychological questionnaire requires great care; the questions and instructions should inspire confidence, they must not be subject to misinterpretation and must be free from suggestions, and they should be sent to the appropriate people. The same thing is true of the *treatment* of the material. Respondents and replies alike must be evaluated; sources of error must not be overlooked in the drawing of general conclusions.

One source of error that clings to even the best written questionnaires raises a consideration of a personalistic character. All that is received from the respondent is a series of statements *arbitrarily drawn* from his life, and there is no way whatever of knowing what it signifies in terms of the total person. Therefore the attempt is now made to supplement the purely extensive questionnaire with a *qualitative questionnaire* through which the psychologist presents his questions directly to a small number of people whom he knows personally, and with whom he discusses the replies. This frequently reveals the true significance of the results with large groups.

2. COLLECTIONS

The method of collecting covers documents of the most varied sort on which some mental impress lingers. The most important items are *creative productions*: drawings, poems, diaries, compositions, samples of modelling and handwork. Such collections, being gathered from the psychological point of view, are clearly distinct from collections assembled from artistic, pedagogical, ethnological, or other non-psychological motives.

The psychologist collecting children's drawings is not interested in the aesthetic value, the technical accuracy or the illustration of a teaching method in this material but in the mental activity manifested by it; to him the drawings yield evidence as to the child's perception of space and color, his ability to design, to imitate, to originate; they afford knowledge of levels of development and types of expression, of inclinations of interest and influences of the milieu.

The more free and *spontaneous* the productions, the clearer is the psychological language that they speak, however poor, primitive, and "ugly" they may otherwise be. Collections of voluntary confessions, diaries, memoirs, are particularly profitable simply because spontaneity is shown in them to the highest, and outside influence to the lowest, degree.

Another kind of collection carries out the aims of the psychology of *expression*. In this line specialization is pushed to a high degree; one person collects only samples of handwriting, another portraits, a third, forms of hands. The same limitation of methods which affects questionnaires applies to all these objects of the collector's zeal; psychological interpretation grows more difficult with greater isolation of the document before us, and with diminished knowledge of the person who produced it.

We may mention a few of the other collection materials that have been used for psychological purposes, in order to illustrate the varied application of this method. These include report cards, personal charts, criminological and welfare records, minutes of meetings, want lists from public libraries, trade marks, matrimonial columns from newspapers. The list of objects one could *think* of collecting could be continued indefinitely, for in every product of human culture there is some sort of precipitate of mental experiences of individuals, groups, nations, and eras. These may be treated by skillful manipulation and translated into psychological insight.

3. HISTORICAL METHODS

Finally distance in *time* must also be bridged; the psychologist seeks to relate mental phenomena of the past with his research, in order to

investigate the peculiar psychological structure of an epoch or an historical personality ("psychology of the Gothic people," "psychology of Napoleon"); or in order to find new and otherwise inaccessible material for the problems of general psychology.

The psychology of genius, for example, cannot be dealt with at all without the help of historical sources. For living genius does not take on a form that is obvious to the psychologist; on the contrary its existence and its nature can be comprehended only from its works, its entire life structure and its effect on humanity, that is, only after becoming historical.

In this way biography becomes an aid to the psychology of the individual, and the contents of general history yield material for research in folk psychology, developmental psychology and societal psychology; even myths and legends may become the tools of the psychologist, a prominent example of this being the cultural-psychological interpretations of psychoanalysis.

Thus the survey of the various *methods* of psychology yields a picture similar to that obtained from our consideration of the fields and problems. The originally predominant working method (experimentation and measurement), which was borrowed from natural science, has in itself undergone a change that brings it closer to cultural science; at the same time it has been supplemented by other methods that to an increasing extent resemble those of cultural science. The synthesis of the points of view of natural science and cultural science is therefore a characteristic, in the realm of psychological methodology as well as in the subject-matter of psychology, of the new era whose conceptual foundations are being laid.

CHAPTER IV

PERSONALISTIC FOUNDATIONS OF PSYCHOLOGY

The three preceding chapters were chiefly retrospective; in them psychology was described with respect to the problems, fields, and methods that have developed up to the present time. The present chapter, however, is *forward-looking*, and of such prospective character that the meaning and the weight of the basic principles of personalistics can be made entirely clear only through the detailed accounts in later parts of the book.¹

I. THE SUBSTRATUM OF MIND •

In the opening pages of this book the subject-matter of *all* psychology was designated in a twofold way as embracing the essential nature and activity of mind. Or in more general terms, the *substratum* and the *empirical facts* of mind. It was also stated (p. 18) that these two aspects cannot be studied independently of each other; they are mutually conditioned. The manner of conceiving the substratum of mind necessarily gives direction to the psychological study of mental data and makes possible explanation and interpretation of the empirical phenomena.

I. INTRODUCTORY QUESTIONS

Do mental data have any "substratum"? Is there an entity *by which* they are substantiated and *from which* they issue? The question must be answered in the affirmative. In itself mentality is only a state of being or attribute, and not an entity. (That is why we purposely prefer the *adjectival* terms "psychical" and "mental" in order to express this contingent, "inherent" character.)

The attempt has often been made to deny a substratum to mind or at least to exclude it from all scientific investigation. In consequence the contents of mind as such were substantialized; ideas, conations, character traits, instincts, etc. were treated as entities that somewhere and somehow had existence, and supposedly dangled in space. This

¹ There is obviously no need here to recapitulate the author's exposition of the theory of personalistics as given elsewhere; all that can be presented is what is directly pertinent for giving a new orientation to *psychology*. Whoever takes exception to the admittedly inadequate treatment and dogmatic form of this chapter may refer to those works which set forth the systematic development and principles of personalistics, especially *Die Menschliche Persönlichkeit; Studien zur Personwissenschaft; Wertphilosophie*.

view disregarded the fact that within psychological experience itself—quite independently, thus far, of philosophical hypotheses—mental phenomena, processes, and states are simply *properties* of the concomitant individual self that “has” them. Not the existence of a substratum but only its *nature* is open to question.¹

Is the substratum to be thought of as an independant “soul”? This second question signifies: Does the substratum itself belong to the mental category? Does its sole essence consist in generating, in owning, in governing the mental realm? And is the substratum accordingly to be contrasted with the individual’s non-mental being, with his body, as with something different and alien? This question is answered in the negative.

The assumption of a substantial mind would require (*a*) that the *mentality* of the individual, as the product of his mind, comprise a closed system of interrelations, (*b*) that the *individual* represent a substantial duality of mind and body, (*c*) that the relationships *between* mind and body be secondary as compared with the primary relationships that hold *within* each category, (*d*) that everything subsisting and taking place in the individual come *wholly* under the heading of mind on the one hand or of body on the other. The inadequacy of this assumption for a science of mind can be demonstrated only by the contents of this volume considered as a whole. As one existing counter-proposal we find the extreme view of materialism, which holds that material substance is the only reality; the substratum of what is called mind is simply the body; mind is constituted by physiological, bodily processes. It is not necessary to restate here the frequently reiterated philosophical arguments against materialism. *Psychology* disposes of it with indirect but telling contrary evidence: its own existence. There *is* a science of mind, and this science deals with something quite different from physiological processes that have been, as it were, merely translated into other terms; it deals with internal experience and events and the ability to have experience; and these categories are different from those of the purely physical world.

There remains but one possibility: The substratum of mind must be something that *has existence going beyond or prior to the differentiation into the mental and the physical*, thereby certifying the original unity of the individual. This formula sounds “monistic,” for all monism attacks the substantial duality of *physis* and *psyche*, viewing both simply as characteristics of a single substrate (thus Spinoza: “Thought and extension are attributes of the sole substance.”) But current monism neglects the question as to the *nature* of the substratum, for this is defined merely as being “at once physical and psychical”; other specifications are not admitted or pass for unknowable.

Consequently monism remains on the same plane that was supposedly transcended by its denial of the duality, and it must rest content with affirming the persisting coexistence of the two disparate attributes ("parallelism") without being able to grasp the *meaning* of this correlation.

There remains the crucial question as to whether the substratum may be defined by *positive* criteria that in themselves belong neither to the purely psychical nor to the purely physical sphere; in other words, whether the categories "physical" and "psychical" can themselves be subordinated as secondary to another category that appropriately defines its essential nature. The affirmation of this view is the fundamental task of the personalistic theory. Not only from the philosophical point of view is the person a "psychophysically neutral" being, but he may also be characterized and *empirically* apprehended through qualities that exist apart from the differentiation into body and mind.

2. DEFINITIONS

We define the person as follows:

The "person" is a living whole, individual, unique, striving toward goals, self-contained and yet open to the world around him; he is capable of having experience.¹

Except for the criterion of "experiencing," which was purposely placed at the end, the specifications throughout are *psychophysically neutral*. Into the totality of the person are interwoven both his physical and psychical aspects. Goal-directed activity is manifested in breathing and limb movements as well as in thinking and striving. Independence of and exposure to the environment apply both to bodily functions and to conscious phenomena.

The attribute "capable of having experience" is distinct from all the others in that it is *non-compulsory*. Every person *must* be at all times and in all respects a totality possessing life, individual uniqueness, goal-directed activity, independence of and openness to the world, *but not always consciousness*. Even at times when nothing is being "experienced" the person exists, while the loss of any one of the other attributes would suspend existence.

There is a *science* of the human "person," that studies him in his totality and psychophysical neutrality; it is *personalistics*. It furnishes common hypotheses for all specialized scientific studies of the person: for the biology, the physiology, the pathology, the psychology, of the person. *Psychology is the science of the person as having ex-*

¹ *Die Person ist eine individuelle, eigenartige Ganzheit, welche zielstrebig wirkt, selbstbezogen und weltoffen ist, fähig ist zu erleben.*

perience or as capable of having experience. It studies this personal attribute, experience, in regard to the conditions of its appearance, its nature, mode of functioning and regularity, and its significance for personal existence and life considered as a whole.

II. LIFE AND EXPERIENCE ("LEBEN" UND "ERLEBEN")

I. THE MODALITIES OF LIFE

Only that which lives can have experience.¹ "Life" is the unity of being and acting in a totality open to the environment. A living being is of such character that its total *nature* is constantly being actualized through its activity while likewise remaining a whole in its incessant intercourse with the environment. This "having life" is the basic principle from which any consideration of the person takes its departure. Life comprises the fundament from which all experience develops, that supports all experience, into which all experience discharges. Life is complete, while in comparison experience is fragmentary and intelligible only in terms of life.

The question must here be brought up as to why the term "experience" (*Erleben*) and not the long-established term *consciousness* (*Bewusstsein*) is preferred in characterizing mind. The term "consciousness"² originally had a completely intellectualistic meaning; it designated the condition in which the individual is a *knower* (of facts or of himself). Later the word was used more and more loosely (permitting references also to a foggy kind of feeling-consciousness, etc.), but its original purpose was always suggested whenever it was employed. It has become a matter of grave concern for the entire modern conception of mind, that mind came thus to be explained in terms of its latest and most refined characteristic, "knowledge." In the rôle of knower the individual is furthest removed from the estate of continuous and autonomous vital functioning.

Two quite different consequences may be derived from the orientation about "consciousness," both of which, however, lead into *cul-de-sac*. As one possible consequence consciousness is separated abruptly from everything that is not consciousness, and psychology is limited strictly to the investigation of "conscious phenomena." Here the connection between experience and the background of life is sacrificed. The other possibility acknowledges this connection but defines the prerequisite of consciousness only by negating it. The indefinite negative term "the Unconscious" proceeds to signify a mysterious basic force that is regarded partly as a contradiction, partly as the origin of consciousness.

¹Nur was lebt, kann auch er-leben.

² Derived from the Latin word *scire*.

In the philosophy and psychology of the "Unconscious" from Leibniz through Schelling and Eduard von Hartmann to modern depth psychology, was developed the basic principle that conscious phenomena cannot be understood or explained in terms of themselves alone. But this view was one that looked backward from the conscious mind, and its descriptions were necessarily affected by the prevailing conception of the conscious mind.

The thesis of personalistics, that "experience develops out of and into life," reverses the approach. The primary thing is really conceived as primary, that is, as bearing the stamp of life.¹ But here a fundamental question arises. What do we mean by "life" in reference to the *human* "person"? Not simply that life which is the subject-matter of current biology. In human beings life appears in *three modalities*, and in going from one to the other the personal *world* also, to which life is open, takes on diverse aspects.

The first modality was just mentioned as the *biological* in a narrow sense. Human life holds in common with vegetable and animal life those functions which bring the individual naturally and unquestionably into conformity with his environment. Self-maintenance and "self-steering," growth and maturing, reproduction, adaptation, mneme, are such *vital functions*. The "world" is present with respect to these functions as but an extended domain of life, as stimulus or raw material, as shelter or menace; it constitutes the vital world or *biosphere* of the person.

We may skip the second modality for the moment and proceed to describe the third, which contrasts with the first since it deals with the purely *human* sphere in the life of the person. Every trace of this third modality of life is absent in animals and plants. In this sphere every human being constitutes a substrate of value and at the same time the unique, meaningful center of a world that also consists of independent substrata of value, be they other individuals, societies, cultural, historical, or religious facts and ideals.

MODALITIES OF LIFE

<i>Person</i>	<i>World</i>
I. Vitality	Biosphere
II. Experience (<i>Erleben</i>)	World of Objects
III. Introspection	World of Values

The aim of human life involves the affirmation by the individual, in his being and acting, both of his own intrinsic significance *and* of

¹The use of the terms "conscious" and "unconscious" in psychological discussion can no longer be dodged. They have become currency that cannot be withdrawn from the every day commerce of science. We ourselves are not able wholly to dispense with the terms on the grounds of verbal simplification. But if the fundamental conceptions of this chapter be heeded, misinterpretations are no longer to be feared.

the objective significance of the world, so that he acquires reality as a person through the coalescence of the world of objective values with his own substance. This coalescence or incorporation the personalistic theory designates as *introception*; it denotes the activity that gives direction and form to all genuinely human life. The unitary and meaningful pattern of life that introception endeavors to establish is called *personality*. Although the concept of "person" in the sense given above may be applied to any individual animal, *personality* is an uniquely human category.

The concept introception is psychophysically neutral, covering as it does the purposes of life functions and not merely a mode of experience. This is also true of all specific forms of introception: loving, understanding, creating, consecrating, etc. While these are wholly inconceivable in the absence of consciousness, their true nature consists in personal modes of conduct and formative tendencies, in enacting intentions, which in view of their ultimate aim, project far beyond the limits of any "awareness." It is on this account that the theory of introception belongs not to psychology but to personalistics.¹

Between the first modality of life, vitality, and the third, introception, there is another, with which *psychology* is directly concerned: the modality of *experience*. The "world" that belongs to this modality likewise occupies a position between the simple biosphere and the world of values. It is the *world of objects*.

2. EXPERIENCE ("ERLEBEN")

a. *Cleavage*. The person is a totality, that is, a *unitas multiplex*. This must be taken literally. All the multiplicity included in the person, the hegemony of elements, events, phases, strata, is *integral* to the totality and not just superficially cemented to it or supported and conditioned by it; it is the *consonance* of multiplicity with the personal whole and of the person with the world, that makes human life possible.²

But this consonance is not merely a perpetuated harmony. The more amply a living totality is articulated and the more various the multiplicity integral to it, the less *self-evident* is its life. Whenever the simple modality of vitality is surpassed but the modality of complete introception is not attained, there is tension and dissonance in life, which resist immediate coalescence with the totality; a

¹ The theory is developed in detail in *Wertphilosophie*, the last part.

² It is therefore absurd to project the essence of life back into a single tendency, some *particular* life-principle, some vital force, or whatever else may be suggested. The biological "soul" of "vitalism," as a special factor in a living creature, is quite as untenable as is the psychological soul-substance of spiritualism.

dis-living sets in. But since these cleavages affect the totality, which cannot be abandoned, they become life functions, assuming the special form "experience."

*Experience, then, is life under cleavage and tension.*¹ Cleavage and tension can never exist as quiescent conditions; they are dynamic processes. Therefore dissonance is constantly being augmented or diminished. All experience consequently tends to become either *salient* against or *embedded* within the totality. Or more accurately, in any experience both tendencies are always simultaneously present, for complete cleavage would destroy the unity of the person while complete embedding would break off the tension and disrupt experience. *The different proportions of salience and embedding* give the process and content of every experience its special character.

The following examples may serve as an introductory illustration of these paired concepts, the use of which will continue throughout the book. When the initially vague feeling of danger leads to definite thoughts and to organized acts of will we have an instance of increasing salience. And when recollections of a loved one who has recently died gradually lapse into generalized and vague melancholy, embedding is on the increase.

Modern Gestalt psychology operates with the concepts *Gestalt* and "surrounding field." As conscious content the *Gestalt* occupies the outermost position at the pole of salience; while in contrast with it, the surrounding field recedes into the total state of the person and is thus embedded.

The proof that experience has cleavage is expressed first of all in the fact that it has *objects*. Living, with the individual, is absolute and unconditional, but his experience is always *of something*. Experience is transitive; it transfers to and aims at something that is not itself experience.

What is this "something" that is experienced? Here we have a new cleavage between the outside world and the person himself. That is, while these two components are one in the immediate vital modality and in the higher totality of introspection, in experience they belong to life apart from each other. The individual experiences the outside *world*; external objects, values, laws, that are potential or actual, past, present, future, timeless; or else he experiences *himself*; his own strivings, values, dispositions, inarticulate tendencies, former states of being, future possibilities. The scale of *objectified experiences* runs from the first tingle of a touch impression through perceptions, ideas, thoughts, to a complete world-view. The scale of *subjectified experiences* runs from the infant's vague feeling of being alive to the adult's

¹ *Erleben ist Leben in Spaltung und Spannung.*

completely formed consciousness of self and sense of his own importance.

Neither the one nor the other end of experience is ever fully reached because the complete sundering of person and world would destroy personal life and experience with it. Even so highly objectified a mode of experience as scientific knowledge never finds the "pure object" and is never able to extricate the world wholly from personal entanglements. And the highest level of development of subjectified experience, "self-knowledge," does not exactly reflect back the self in its undisguised essence; for the one experiencing and the thing experienced would then be one and the same, and the necessary condition of experience—cleavage and tension—would be destroyed.

Experiences that objectify and subjectify are thus like endless *voyages of discovery* into the objective world and the subjective self; the ultimate ports of "thing in itself" and "self in essence" are never arrived at in experience. The passage of objectification and subjectification through many stages constitutes another of the leading *motifs* of this book.

b. *Appearance*. Now although a gap always remains between the experience and its object, on the other hand a *positive* connection obtains between the two; for every experience *points to* some existence (in the external world or in one's own person). This positive relation is suggested by the terms *mirroring*, *appearing*. (For example, past events appear in a remembrance; the personal weakness of the subject is mirrored in a feeling of inferiority.) In experience the object is given a second time, not, to be sure, actually duplicated, but as a reflection that is both similar and dissimilar to, close to and distant from, that which it reflects. It is *appearance*, but not disembodied appearance; on the contrary it is *authenticated appearance*.¹

Under this double aspect conscious phenomena must consequently be regarded now as approximations of reality, now as aberrations of it, i.e., as "illusions." It is a fact of importance that not only are there illusions of objectifying experience, that is, sensory illusions, memorial illusions, illusions of judgment; but that illusions of subjectifying experience also arise in a corresponding manner; the inner picture that anyone has of himself *must* necessarily contain illusory items. (Here kinship may be found between insights of modern depth psychology and the basic principles of personalistics.)

As measured by its objects, then, experience is imperfect and non-congruent; still it deals with appearance and reflection. This raises the question: *What is the significance for the person of this double nature of all experience?*

Experience is fragmentary. The sum total of life processes and

¹ This alternative is expressed in German by the terms *Schein* and *Erscheinung*.

contents is not convertible into experience, nor does it need to be. Only such particular occurrences within life as involve *tensions* are at the same time experienced internally. The individual is mirrored in his own experience in so far as he is in a *struggling* state, i.e., in so far as internal resistance and inhibition interrupt the plain current of life. And the world is reflected in his experience in so far as it deviates from the individual and his course of life as something salient, alien, questionable and even hostile.

The more acute the tensions, the more multiform the frictions, the more impermanent—and hence uncertain—the objective situations under which the individual lives, the stronger is the conscious representation of his life. It is on this account that: (1) the life of the adult has so much more of awareness than that of the child; (2) civilized man has so many more possibilities and so much more need of experience than primitive man; and (3) changes and catastrophes in life, new impressions, and new developmental phases, are endowed with consciousness in a wholly different manner than are the more quiescent states and conservative phases of existence.

Yet the life-modality of tension and indeterminateness is not a domain of life set apart by itself, but is always in close connection with both the other modalities, vitality on the one hand, introception on the other. Hence experience itself merges under a thousand imperceptible shadings into those life modalities that have no need of consciousness, just as it continually arises from them in the reverse order. The marginal states comprise an especially interesting object for psychology, for in them experience no longer possesses the easily identifiable character of clearly salient patterns of consciousness, but becomes more and more deeply embedded in life until it entirely disappears within it.

In other instances, to be sure, the *point* can be assigned at which an inner tension or an external disturbance gives rise to a conscious phenomenon. This point constitutes the *threshold* of experience. Thus the concept of threshold extends much further in personalistic psychology than in psychophysics, where it is restricted solely to the coming to consciousness of sensory impressions.¹

While experience is fragmentary, this incompleteness is not *capricious* and meaningless, but fits perfectly into significant and purposeful connections of personal life. For life is dammed up in experience; energy used up is accordingly drained from some other immediate process. (For example, as long as the individual has full awareness of voluntary motives and conflicts of motives, his capability of acting is crippled.) On this account the economy of experience is an essential factor in the person's budget of energy. This is regulated effectively

¹ See pp. 179, 284; Chap. XXIX, III, 1.

by appropriate *selectivity*, which shunts life processes into experience in accordance with the *personal relevance* of the tensions and disturbances. This is alike true of subjectified and objectified experience. The individual himself becomes his own object of awareness only with respect to those items which maintain some distance from him, and similarly for external things; only that small sector of his world may become his objective world which is still too remote to be merged with his biosphere or his sphere of introception, while yet close enough to attract notice as something split off and alien. *Exclusion* by selection also has personal significance; forgetting, suppression, "being taken for granted," automatization, in short, any process generally ascribed to the "Unconscious," is organized within the total purposes of the personal life-process.

A similar situation obtains for the *incongruence* of the content of experience with its object. In designating such dissonances as "illusions" we did not do justice to their positive rôle in the life of the person. As we have seen, experience is always on the offensive. It must therefore *serve in the struggle* as weapon and instrument, as prevention and cure. For this reason, experience cannot be a smooth and unyielding plane mirror, uniform in clarity, reproducing self and world with equal exactitude and unerring accuracy; rather is it an elastic envelope of many folds about the person, reflecting, with its wrinkles and hollows, tangles and variations of form, in accordance with the demands of the personal state of tension, so that the proportions are altered, the reflected light is strengthened, weakened, or extinguished. The individual experiences *himself* so as to live on the best possible terms with himself. And he experiences the *world* in such a way that the foreground appears large, the background small, important items clear, incidental items blurred, the thing loved worthy of love, and life worthy of being lived.

This reduction of internal and external reality to patterns of experience is, to be sure, never final; for the incongruence of image with reality produces new cleavages of life that in turn engender new experience; thus the supplanting of naïve experience by more critical experience, the progressive correction of internal and external illusions, is in itself one of the principal activities of consciousness.

III. MIND

Our theory must now be brought into alliance with the central concept of the science of psychology. What is "mind?" What things may be called "mental?" And in what sense do they become objects of psychological study? We begin with this definition: "*Mind*" is everything about the person that is experience or that is es-

sentially related to experience. In explaining this definition we shall follow a course contrary to that of the foregoing section; we shall work up from *below*, i.e., from actual, singular items of experience, through the capacity for experience, to the person.

I. EXPERIENCING

a. *Patterns of experience.* Contemporary experience may run its course in continuous, flowing activity; it is then *unpatterned*, vague, deeply embedded in the personal totality. But it may also appear as a unitary pattern, clearly marked off from other patterns of experience. Such a total configuration of experience has its commencement, rise, climax, decline, and termination, and is structured and formed in terms of itself. Thus there are patterns of thought-experience, of volitional experience, of aesthetic experience.

The general relation mentioned above between experiencing and living is naturally repeated for each individual item of awareness; every such pattern of experience is the partitive appearance of a "life pattern."¹ The concept "life pattern" proves to be necessary since life as such may also become actualized in relatively delimited part-wholes. A circumscribed act of will is a life pattern; only a few portions and aspects of it are represented in the experiential pattern of volitional consciousness belonging with it.

b. *Phenomena.* The content of what is presently conscious to the experiencing person, is called a mental *phenomenon*.² It is mind in its purest but also in its narrowest sense, without admixture of the non-mental; and hence in its delimited state it is unrelated to that to which it is attached and which gives it significance.

A pure psychology of phenomena would necessarily be smothered by pure description. Nevertheless phenomena play a fundamental part in psychology since they constitute, as it were, the *original material* that psychology must describe, analyze, and classify in order to be able to interpret and explain it.

The differentiation of phenomena (into sensations, ideas, feelings, thoughts, conations etc.) as well as their articulation (as Gestalten or grounds, complexes, chains of ideas and the like) is an object of psychological investigation. *But all further activities of psychological research are removed from the phenomenal plane.* For the subsequent concern is with data that are no longer themselves contents of experience, but are related to experience and may therefore be called "mental" in a *broader* sense.

"Phenomena that are not experienced" is a self-contradiction. The

¹ The alternative of "pattern of life" and "pattern of experience" is expressed in German by contrasting *Lebnis* and *Erlebnis*.

² *Bewusstseins-Erscheinung.*

designations "unconscious idea," "unconscious feeling" are handy—but absurd. The contents of experience are not things that may be taken out of experience and placed somewhere else, and that may perhaps be later repossessed by experience with their identity preserved. If the term "unconscious" is not to be renounced, it must at all events be restricted to mind in the *broader* sense, that is, to personal states, acts, and dispositions.

c. *States and acts.* The relationship of the person to his contemporary experiences is both of having and acting. The individual *has* experience and he *acts* through experience. This is simultaneous, for there is no experience in which both are not united. But the relative importance of each may be so variable that we have a right to designate many experiences as *passive*, and other experiences in which the person is involved as a directive, formative, selective agent, as *active*. Striking examples of passive experience are the mood of coziness, day-dreaming; of active experience, a vigorous and concentrated train of thought, an inner conflict between inclination and duty.

The *act* that governs an experience is itself no longer a content of experience, and is thus not "mental" in the narrow sense. It may indeed be *represented* in consciousness by phenomena, as a feeling of activity, sensations of strain, etc., but such phenomena are only precipitates or reflections (that may be imperfect or even deceptive), and not the act itself. The designation "mental act" is nevertheless applicable in the *broader* sense to an act that is directed upon mental phenomena, or *in so far* as it is directed upon such phenomena. An act of thought is thus "mental" because the contents and process of thought that it produces and directs are mental phenomena. An act of will is "mental" in so far as it includes volitional experiences (phenomena of need, motivation, choice, decision). But this second example shows that the usefulness of the term "mental" is limited. For the act of will as a whole takes its meaning from the purposive unity of mental experiences and bodily actions; it is a psychophysically neutral, a *personal* act. The psychologist has the right and the duty to separate and analyze the mental aspects which it contains, and to consider them for themselves; but if he consequently calls the whole a "mental" act, he must constantly keep in mind that he is designating only dependent partial aspects, and that he is missing the meaningful *totality* of the act. It may be seen once more from this how immediately personal categories are superordinate to both the purely mental and the purely somatic.

2. DISPOSITIONS

A particular pattern of experience is restricted to a definite present. It begins and ceases; some other kind of experience or activity without

experience both precedes and succeeds it. Are we to limit the concept "mind" or "mental" solely to the fragmentary and chaotic occurrence of phenomena, states, and acts? In the general usage of language it was long ago decided otherwise, and this usage we shall follow; for under the personalistic theory we are justified in broadening the concept "mind" to cover *potential experience* as well. The person is a meaningful unity in his total conduct of life; his goal-directedness impels us to insert every single item into the *personal-historical* relationship and to see in this relationship, as it were, the potential background; i.e., the tendency and readiness, in short, the "disposition," for the production of present items.

After the 18th century doctrine of "mental faculties" (*Vermögenslehre*) had been shipwrecked in the 19th century, psychology was for a long time determined to succeed without any "dispositional" categories whatever. We now know that this is impossible. Concepts like memory, imagination, intelligence, temperament, character-trait, suggestibility, etc., are more than a mere classification of ideas, feelings, and actions. These signify at the same time the *lasting* attitude and capacity of the person to actualize such items, given the opportunity, in definite ways. Dispositional concepts are, however, scientifically useful in modern psychology only if they are distinguished from mental "faculties."

a. Dispositions are not rigid and compartmentalized mental powers that might exist independently side by side, but are the *dependent radiations* of a single personal entelechy. There is not in reality an isolated memory or an isolated intelligence etc. On the contrary all these are only moments, aspects, perspectives, of the person's total life. But science must assimilate these perspectives which were laid down in the structure of the person, and is therefore obliged to emphasize one or another disposition from time to time, without ever forgetting that various dispositional trends are shared by every single *concrete* experience.

b. *Dispositions are possibilities for action having a range of free play*, not powers discharging a sole function, and are consequently not the only basis for what actually occurs within the person. Other factors deriving from the external world *converge* at all times with dispositions. There is no pattern of life or of experience, no condition or mode of behavior of the person that could be derived exclusively from dispositions, just as there is no such item that could be uniquely determined by the milieu. The milieu has an effect only because *susceptivity* to its influences is pre-established in dispositions. For their part, dispositions must be supplemented; they eventuate into explicit action only because the environmental situation affords them the stimulus or material for doing so.

This *convergence theory* makes it possible to transcend the equally one-sided points of view of nativism and empiricism. We must neither seek to explain man solely in terms of the "inborn" and specific qualities that he possesses at the outset, nor may we regard him merely as a passive mechanism for receiving fortuitous external influences.

c. Dispositions, viewed teleologically, are possibilities in a twofold sense; as implements and as directional determinants of personal functioning.¹

Example: A mnemonic disposition includes the *ability* to make use of the effect of previous patterns as well as the *readiness* to utilize them in a specific manner (e.g., to enrich ideational activity with visual imagery).

Thus in every disposition there lodges at once *potency* and *tendency*. But according to the one perspective or the other either the potency or the tendency may be considered the primary characteristic of a disposition; accordingly *instrumental* and *directional* dispositions may be distinguished.² As between the two, *intelligence* is an instrumental disposition, because of the *instrumental* significance that it has for the most varied purposes. In contrast, *interest* is a directional disposition, for it includes the lasting attitude of the person toward definite *aims*.

d. Dispositions may *vary* according to time, potency, and tendency. While dispositions are indeed *lasting possibilities*, it does not signify that they must necessarily accompany the *entire* life of the person from birth to death. There are dispositions of quite diverse temporal structure.

The mental instability and lack of balance of many people at the time of puberty is doubtless dispositional in character. Yet when the period of puberty is over no trace of this "epochal" disposition need any longer be present.

Dispositions may also be connected with very definite life-situations; during an illness or before an examination the individual is quite differently "disposed," bodily and mentally, than at other times.

But even *lasting* dispositions, which cannot be conceived apart from the life of the person, are not always present in exactly the same aspect. Instinctive tendencies, the capacity for mneme, the capacity for thought, etc. are part of the nature of every individual, but undergo many alterations in the course of life. From a completely latent state they develop sooner or later into a state of readiness; in this

¹ Cf. p. 305 of this book and, for more thorough references, *Die Menschliche Persönlichkeit*.

² In German: *Rüstungsdispositionen*, *Richtungsdispositionen*. McDougall's distinction of "abilities" and "propensities" has a similar meaning.

process their potency acquires force and their tendency becomes definitive. What was originally only a vague, highly ambiguous "potentiality" gradually solidifies into a characteristic trait.¹ Even the *direction* of their tendency may be changed in the course of time; character traits and bents of interest may vary within certain limits. And the *degree* of readiness may undergo periodic or aperiodic fluctuations; a disposition may be so charged with energy that the slightest impetus suffices to actualize it; at other times it is difficult to set off or is wholly latent.

This variability of particular dispositions prompts us to raise again the question of causation. They are clearly not, as the doctrine of "faculties" insisted, permanent original powers that, being irreducible in themselves, furnish the causation through life and experience. Rather are they influenced in part by the natural and cultural conditions of the milieu (climate, education, influence of society, etc.), and in part by the totality and the singularity of the person, whose radiations they are. Again the convergence theory proves true.

e. The term "mental" is applicable to dispositions in its *broad* sense only. These do not, of course, *appear* as such in consciousness; in its dispositional guise intelligence, for example, is not a thought phenomenon but the basis for possible thought phenomena. In this case, however, the designation "mental" as applied to the disposition is not likely to be misunderstood because its activity is directed upon mental phenomena (content and process of thought).

It is otherwise when the manifestations of a disposition are themselves no longer exclusively mental or physical, but are psychophysically neutral. Then the disposition may be called "personal" rather than "mental."

Here are three examples. *Temperament* is the provision of a definite sort of personal dynamic; this dynamic (e.g., of a "sanguine" individual) is manifested in the tempo, abundance, change, openness, lack or restraint of personal activity generally, be it a matter of goal-directed and expressive *movements* of the body only, or solely of *experiences* in the domain of temper and conation. *Character traits* signify permanent attitudinal sets for certain kinds of acts of will; but acts of will (see p. 79) are personal acts, i.e., psychophysically neutral processes which include motor activities as well as aspects of experience, but are not purely mental phenomena and acts. *Mnemic* dispositions too, such as exercise, are not purely mental in nature; verbal memory, for example, covers the readiness for speech movements as well as for images of words.

¹ In consequence the maxim holds throughout *practical* psychology that "potentialities may be influenced, but traits must be taken for what they are." (*Auf Anlagen kann man wirken; mit Eigenschaften muss man rechnen.*)

3. THE "PERSON" AND "PERSONALITY"

The path from below upward took us from concrete, particular phenomena to states and acts that include them but are still concrete in every case, and from these to both temporary and lasting dispositions. But since the multiplicity and coexistence of the latter cannot be final, these too must be brought into an inclusive unity; and this unity is the person. In what sense is the designation "mental" to be applied to the person as such?

We may preface the answer with a few words in regard to *animals*, for the problems relating to man will thereby gain in clarity.

According to our definition, to be sure, the animal individual is likewise a "person," but almost wholly a "vital person" (organism). Its activities are virtually confined to the lowest of the three life-modalities, i.e., "vitality." Accordingly the modality of experience has but a rudimentary significance for animals as compared with man. Consciousness is merely appended as an incidental epiphenomenon which accompanies inhibited and strained vital functions.

Since the modality of introception is entirely lacking, all functions of consciousness which direct and prepare introception are also lacking. (Similarly the animal's *world* is almost solely biosphere; an objective world is present in scanty traces at best.)

This structure of the animal individual implies that the science of animal life is and must remain essentially biology. There can never be an animal *psychology* possessing the independence and systematic organization of human psychology; and it is no accident that behaviorism, which is restricted to the study of vital modes of behavior and their relation to the biosphere, developed directly from animal investigations. In *man* the modality of experience plays a totally different part, and therefore the human person is "mental" in quite another sense and to another degree than the individual animal.

It is characteristic of man that *experience has an intermediate position between vitality and introception*. The human mind is both a superstructure built upon the foundation of "unconscious" vital activity and a substructure for the introceptive acme of life. The individual must become alienated from the self-evidentness of his merely biological nature and thereby try to raise himself and the world to the plane of objectivity; and he is constantly dominated by the striving to transcend this alienation on the still higher level of a life charged with value in a world of values. And this dual import of his life can be achieved only by *experience*. Consciousness is sublimated—refined, subjugated, shaded—vitality; on the other hand it is an adjustment to one's values of existence and to those without.

Here are two preliminary examples of this mediating function of consciousness: From purely vital sensitivity develops conscious perception that leads to the comprehension of an objective world, and ultimately to its introception into a systematic scheme of the world and of life.¹ The purely vital sexual function becomes sublimated to feeling-experiences of longing and desire, which, as love-experiences, proceed to make ready for the introception of another self into one's own personality.

The capacity for experience (*Erleben*) thus changes the *human* being from a purely animalistic, vital person into a human, introceptive personality; it transforms his *world* from a mere sector of life into a system of objects that invite introception. On this account the human mind has great instrumental and radial (symbolic) significance. On the one hand, the *service* of mind is a broadly outlined mediating function of the activities of personal life; on the other, mind *represents*—illustrates, symbolizes—the location of the individual between vitality and value.

But the instrumental and the radial significance of mind, however inclusive they may be, are never anything but derived meanings. "Mind" does *not* have any intrinsic meaning, in the sense of final, irreducible import. Human personality simply cannot be characterized as mental because mind must in turn be characterized by its significance within and for human personality.

4. THE RELATION OF THE MENTAL AND THE PHYSICAL

a. *General aspect.* Under the personalistic conception the ancient "mind-body" problem receives a new direction, and at the same time loses much of its former significance. The individual is not partly body and partly mind, but a person with the capacity for experience. He is a portion of a world that, although bounded on the outside, nevertheless continually exchanges substance and function with all other portions of the world; this is his corporeality. And he also has the capacity to reflect himself and the world inwardly; this is his mentality. The life of the person includes *both*; accordingly *there is no experience and no capacity for experience that is not bound up with the physical aspect of life and with bodily functions*.

How, specifically, is this connection to be regarded? Certainly not as an "interaction" in the Cartesian sense. For that theory assumes the existence of *two* substances in the individual that are to act upon each other, and the hypothesis falls with the rejection of a substantial mind. Nor is it to be regarded as a "psychophysical parallelism," which in theory asserts a thoroughgoing, unambiguous, and constant correlation of mental and physical items. According to this view a definite physiological excitation corresponds to each

¹ *Weltanschauung, Lebensanschauung.*

elementary mental phenomenon, a succession of excitations to each succession of mental phenomena, a physical pattern or Gestalt to a mental Gestalt ("isomorphism") and a region of the body to every mental disposition, as its seat (doctrine of localization).

This conception is inadmissible simply because of its elementaristic assumptions. For there are no special mental or physical items in the personal totality that are at once so isolable and so stable that they could form *among themselves* a direct relationship, independent, as it were, of the person. Every relationship of the physical and the mental *passes through the person*, and is first set up and afterward directed by his total activity and total aims. Moreover, whether the correlation is constant or variable depends upon its significance within the personal entelechy.

Example: A particular brain cell does not "experience" a definite idea when it is excited; rather does the *person* respond to a definite stimulus situation with a *total* reaction that is physically concentrated chiefly in certain cerebral tracts and that mentally results in an ideational experience.

It must not be considered a piece of sophistry to introduce the "total person" between the physiological and mental processes, and no mere obvious truism should be seen in the fact that physiological and mental processes occur in the same identical person. For the person is not here regarded as a mere go-between or passive theatre of psychophysical events, but as their true generator and carrier, governor and regulator.

The reference to the person of both the physical and the mental alike permits the psychophysical relationship to be conceived as a *meaningful* connection, whereas ordinary parallelism or isomorphism must rest its case with establishing the conjunction of two series that are wholly disparate from each other. When we called attention above to the fact that everything pertaining to the person has *instrumental* and *radial* significance for him, we intended it also to hold by inclusion for the meaningful relationships of *physical* items to the *experiencing* person.

b. *Instrumental significance of the body.* The person makes use of his body as an implement in the service of his experience. There is considerable *teleological* correlation which is nevertheless quite different from psychophysical parallelism. The total end of the person implies that a system of bodily organs is available for the highly *salient*, graduated, and structured modes of experience; this organization is itself highly differentiated and adapted to graduated special functions. This is the central nervous system. On the other hand, the *embedded*, more diffuse modes of experience and the dispositional states of mind

are connected with the functions of circulation of the blood, assimilation, internal secretion, etc., that is, with such functions as are interwoven with the organism in its totality.

Moreover stability or variability of bodily functions is adapted to the special activities that they must perform in the service of experience. Those experiences that scarcely go beyond the vital sphere are relatively constant in nature, both phylogenetically and ontogenetically; thus the corresponding bodily processes may be established in a fixed manner for the most part in race and individual alike. That is why psycho-physical correspondence in the domain of instinct and habit has for the most part a stereotyped character. Contrariwise, it is a peculiarity of higher types of experience that they are continually being readjusted to the changing activities of life through a process of give-and-take, and become connected with perpetually new patterns. They thus require organic implements that are mobile, capable of changing position, and capable of forming new combinations.

This is true of the peripheral as well as the central regions of the body. Why is the human hand adapted to playing the piano? Because each finger movement is *not* associated with a definite touch, a definite tone, a definite impulse to movement, but is predisposed for endless coördinations. The same proves true within the central nervous system. In contrast to the spinal cord, with its stereotyped and inherited sensori-motor coördinations, the cerebrum is the properly qualified instrument for the admission of changing experiences, for the production of different syntheses in thought and imagination, for creative activity that is not closely tied to the past but is in line with the future. It is *able* to serve as such an instrument because its parts and their functions are *not* associated irrevocably with definite contents of experience, acts, and abilities.

This contrast between the stereotyped and the flexible in bodily functioning must not be understood as a dualism. Both modify every organ and every organic activity; but the manner in which stability and lability are *connected* with the person's activities through special bodily organs or functions differs radically according to the nature of the service to be performed.

It is therefore a justifiable and fruitful psycho-physiological inquiry to seek relatively generic and constant correlations between mental and physical items. But this is only *one* perspective; the rigid coördination must be tempered by recognition of the capacity of such correlations to be transformed and made novel and individual, and to have more than one meaning.

It is very instructive to follow the periodic alternation of these two views in the study of nerve and brain physiology during the past century

and a half. At one time detailed hypotheses were set up along the line of "specific energies"; i.e., with every particular place and process in the nervous system was correlated a quite definite, unique mode of experience (sensation, idea, volition). And in the same way even the mental dispositions were conceived to be connected with fixed regions of the cerebrum (phrenology in the eighteenth century, the doctrine of sensory, association, speech, and motor centers in the nineteenth century). But such a parallelism of parts was repeatedly dissipated by a totality view that rejected the specific assigning of mental activities to isolated regions and elements of the brain and emphasized the many-sidedness and plasticity of the cerebral apparatus in its relations to the person's total end.

At the present time this latter view is again decidedly in the ascendant (Lashley, Goldstein, and others). This time, however, one-sidedness is avoided, and the attempt is being made so to conceive the *twofold function of the nervous system*, in a manner analogous to the personalistic interpretation indicated above, as to ascribe both specificity and elasticity to it. The existence of "centers" in the cerebrum is consequently not disputed (how indeed would that be possible in view of the countless proofs from anatomy, physiology, pathology, and clinical examinations?), but these centers are no longer regarded as fixed local organs that are solely and immutably the determinants for storing up, associating, and promoting the activity of definite mental functions. They are simply regions that have peculiar *readiness* for the performance of special functions for which they are predisposed (but not predestined) by heredity.

How greatly the elasticity of psychophysical correlations is influenced by the person's total goal-structure is shown by the phenomena of *substitution*. These may likewise be peripheral or central. A person whose right hand is injured writes (although imperfectly) with the left. The blind man cannot of course "see" with his groping hand, but he can exercise the mental functions of recognition and discrimination with it that would otherwise require an optical receiver. And even the incapacitation of a brain center need not result in the utter disruption of the mental phenomena connected with it; restoration of function, though of course to a restricted degree, can take place through the medium of other portions of the brain. Deaf, dumb, and blind people are able to learn to speak (by means of a language of touch). Their "speech center" must accordingly have a wholly different structure and arrangement from that of people with normal senses, for it possesses its functional capacity not by virtue of appropriate nervous connections with the ear and the vocal organs, as in their case, but by virtue of connections with the hand, which transmits signals and receives impressions of touch.

c. *Radial significance of the body.* The meaning of the body for the person is not however simply its instrumentality; it also has radial or

symbolical meaning, i.e., bodily states and movements portray the nature of the person. Since the inner experiences likewise have radial or symbolizing significance of this sort (see pp. 76 f.) the one and the other class of phenomena are *united* in producing the psycho-physically neutral *expression* of the person.

Once again elementaristic psychophysical parallelism is conquered. It is not a question of the nature of some unknowable arrangement by which certain feelings are linked up with certain postural movements, accelerations of the pulse, etc. *The arrangement by which the person expresses his life inwardly and outwardly includes both components in one.* Rise of the tide of personal life, for example, is expressed as a unity in acceleration of tempo of both ideas and movements; in expansiveness of feeling as well as in extension of the body and spread of the arms. *Feeling could not be experienced at all if it did not at the same time achieve bodily expression.* In the same way, lasting mental dispositions have their bodily expression in permanent features and states of the physiognomy, of gesticulation, bodily build, demeanor, etc.

IV. THE PERSON-WORLD RELATION

a. *The "personal world."* As a totality that is "open to the world" the person, in living and experiencing, is occupied with incessant intercourse with the world. But every person has his own personally relevant world, briefly, his *personal world*. There are a number of general specifications of the nature and structure of this world of every person, which differentiate it in principle from the other "worlds" (mathematical, physical-cosmological, sociological, and historical).

In contrast to the cosmic world, the personal world is *centered*; each person is the center of his own world. But this center is not, like the origin in a mathematical system of coördinates, a point lacking extensity and quality. Being the person, it is possessed of structure and content. All other characteristics of the personal world are generated from the structural and meaningful correspondence of the personal center with the world.

In accordance with the three modalities of personal life¹ the personal world also takes on three modalities (mentioned above in passing): *biosphere*, the domain of vital functions; *objective world*, the goal of objectifying experience; *introceptible world*, the cosmos of individualized carriers of significance and value, and of claims that become related to the person's center.

b. *Valence and materiality.* Not only the person but also *his world*

¹ See p. 72.

is *developed* in perpetual commerce of events between person and world. The "milieu" of a person is not that portion of the objective world that happens to be nearby and consequently influential; the environment is rather the portion of the world that the person *brings* near to himself because he possesses receptivity or sensitivity for it, and to which he also *seeks to give* that form which is appropriate to his essential nature. Two persons who live long amid the same scenery, in the same society, or even in the same room, nevertheless do not have the same milieu; for each person exerts diverse selection and shaping upon things, events, and circumstances; on this account the total pattern and the atmosphere of the two personal milieus also vary.

This commerce between person and world is so intimate that there is no separating cause from effect in any given case. With regard to ends, however, it is possible to distinguish two directions of activity in the person-world relation; the one is centripetal (world-person), the other centrifugal (person-world). In the first case the person is receptive and responsive in encountering the world, in the second he is seeking and giving. The person's activity is thus consummated in *reactions* in the former instance, in *spontaneous actions* in the latter; in the former the personal world has *valence*, in the latter, *materiality*.¹

These principles put into the shade the impoverished "reaction" theories which view all that transpires in the person, even mental activity, solely as processes of response to environmental stimuli. While such a conception may be efficacious to a considerable extent in zoölogy (although even here it is insufficient by itself), it is at all events wholly inadequate for human beings. Those specifically human modes of living that are accompanied in large measure by experience are certainly never consummated through mere responses; under them, on the contrary, the person has in his own right a determinative effect upon the world; his relations with the world are extended and multiplied by reason of his *spontaneous* activities. The world is the point of attack, the raw material, for these spontaneous actions, though it also proceeds to offer resistance and to set limits, so that spontaneous action is integrated with reaction and is thereby made specific. The sovereignty of pure creativity is quite as impracticable a principle as passive acquiescence to the world; in reality there is simply endless oscillation between spontaneity and reactivity. *The personal world is at all times both the destiny and the product of the person.*

c. *Homogeneity and heterogeneity.* As to quality, the person-world

¹The former term (*Aufforderungscharakter*) was introduced by Kurt Lewin. As to *Materialcharakter*, see p. 388.

relationship is sometimes "homogeneous," sometimes "heterogeneous," in each of the two directions described above.

Centripetal homogeneity; "assimilation." By virtue of his membership in and his devotion to the world the person participates in that entire transpersonal nexus which constitutes his world. In him are actualized the characteristics of breed and clan, of nation and race; from his environment he takes over customs and usages, values and convictions, modes of action and conduct.

This process of assimilation is in itself psychophysically neutral; to it are subject bodily form and style of movement as well as ideational content and mental set. It operates, moreover, both in phylogeny and ontogeny; inherited tendencies make the individual an homogeneous member of the racial order; imitation, cultural acceptance, suggestion, bring about his assimilation into the rest of the world.

Centrifugal homogeneity; "impress." From his spontaneous inner activity every individual leaves by impress upon his personal world the stamp of his essential nature. He translates his intimately personal ideas into transpersonal performances; he serves, consciously and unconsciously, as a model and suggestive influence; he extends, as it were, the sphere of his personality into the surrounding atmosphere and thereby forms the community, the home; he determines the spirit, the form, even the substance of his sector of influence *in accordance with his own nature*. He also determines the *future*. Indeed, the most significant effects of impress are those that outlast the individual originator and constitute his immortality, through the survival of his personal cast in descendants, and of his personal ideas and accomplishments in human culture.

To be sure, homogeneity, whether centripetal or centrifugal, never results in out-and-out duplication; its actual effect can be but one of *similarity*. This limitation is due to the fact that no community of person and world can ever entirely silence the rhythm and specific melody of either factor. However great the power exerted by the world to make the individual fall in with its trend, he nevertheless continues to be a "person" and can react to its influence only as a person, thereby modifying and deflecting its very tendency. And vice versa, however strikingly novel and penetrating the effect of the impress by which the genius of an artist, the founder of a religion, a statesman, puts a new face upon the world; since this modified world has no creative genius, it can absorb novelty only in a diluted, simplified form; and since it meanwhile follows its own laws and is subject to still other influences, it perforce modifies all acquisitions. In other words, there is some *heterogeneity within* every homogeneous relationship between person and world, and its importance is not confined to this point.

The *meaningful relationship* between person and world is a *resultant*, and its total meaning can be achieved only because each factor contributes a *different* part-meaning, according to the diverse nature of each. When the one component is dominant, the other is subordinate; the reaction to danger is defence or flight. A similar *heterogeneity* affects a future relation; the farmer plants now to harvest in the future; the merchant's present negotiations bring future profits. Everywhere the two terms have complementary significance. Since they occupy different positions in the relationship, they *differ* from each other; as stimulus and response, means and end, cause and effect, need and gratification, motive and act. In every case a single term is incomplete by itself; it takes the other to *complete* it.

Paired terms give the most clear-cut appearance of heterogeneity when they form an *antithesis*. But an antithesis is itself a particularly strong relationship. The person-world relation is dialectical in that *what is denied by its antithesis contrives to be completed by its antithesis*. The person seeks in the world that which he *lacks*, and reacts against the world with the force of a *counteraction* whenever his own being must be asserted in opposition to the process of assimilation.

V. THE PERSONAL DIMENSIONS

"Space" and "time" are categories that are treated by widely divergent scientific disciplines, but in a special way by each. To these various doctrines of dimension we must subjoin a *personalistic* view. The "personalistics of dimensions" occupies a position between objective science, which treats space and time as items of epistemology, mathematics, physics, history, etc., and psychology, which deals with the consciousness of space and the consciousness of time. Its subject matter is the *personal dimensions*, i.e., those extensions in definite directions through which every person actualizes himself and his personal world. In contrast to the "dimensions" of mathematics the personal dimensions are not pure formal principles but qualitative attributes sustained by a constant inner development. Along certain dimensions personal life is *partially* converted into experience, and it is this experience with which the psychology of space and time is concerned.

I. THE INWARD-OUTWARD DIMENSION

The mathematical and physical world is without a center, for any desired point may be taken as an origin and this may be replaced by any other point. *The personal world has a natural center* from which and toward which everything pertaining to it extends; this is the person

himself, about whom it is oriented (see p. 88). This center is essential and indispensable as long as the person and his world exist.

The origins in mathematical dimensional systems are "points," that is, simply bare loci of coördination having no consistence or form of their own. *The center of the personal world*, the person, is a finite, structured totality which as such *includes extension within itself*. On this account we shall have later to distinguish between personal dimensions proper to the person and those proper to the world.

The person-world relationship is thus the relationship of *two* systems of dimensions, and this relationship may in turn be expressed dimensionally as *inward-outward*. This comprises the basal polarity within the personal world; in the non-personal world there is nothing analogous to the inward-outward dimension. (A mathematical point has no "inwardness"; everything related to it is "outer.")

The *polarity* of the inward-outward dimension involves the assumption that person and world confront each other in basic opposition. Wherever they are one, as in the first and third modalities of the person-world relationship, this *dimensional polarity is lacking*. In the primitive state of the infant, who as yet exists wholly in the biosphere, nothing is inward or outward. This is also true in the exalted state of introception; for the lover the loved one, for the devout man divinity, is no longer something "outer" that is opposed to his "inner" being. Thus the *poles* inward-outward exist only for the middle modality, where the world becomes *objectified*. The things and processes of my world, other people who are alien to me, together with their life-patterns and experiences, are "outside," whereas my heart and my lungs, my thoughts and feelings, are "inside." It may be perceived from this criterion that the inward-outward dimension is psychophysically neutral. "Inside" and "outside" may alike be both physical and mental.

The present. Since inward-outward polarity is not in existence at all times, we need a term for that primordial principle of dimensionality which obtains *before* a state of opposition is reached and *after* it has been left behind. (See the examples just mentioned.) In what dimensional sphere does the infant live who does not yet distinguish himself from the external things? And the lover to whom the loved person has ceased to be an external object? This fundamental sphere may be called the *present*, or more precisely *the personal present*. Its nature harbors the germ of the entire personal dimension-system.

In the personal present, the incident life pattern (of the person) and the coincident *situation* (of the personal world) are completely *fused into one*. For example, at this very instant there belong to *my present* the thought that is forming and the impulse to guide the pen,

as well as the object "pen" and the objective writing that is appearing on the paper.

The personal present is "spatio-temporally" neutral; it is the un-separated "here-now." In this respect our concept of present differs from the purely temporal present of objective science.

The personal present is not inextensive, but has *extension and structure*. A melody to which I am listening, or the action of writing that I am pursuing, is given to me in a "now" without any contingent loss of the temporal pattern of the melody (or of the action). At the same time the action of writing is taking place *here*; no point may be assigned for this "here"; not only my body but also objects extending out from it in space, the paper, the desk, belong to the "here." The structure of the present at any given time depends upon the personal relevance of the factors contained in the life pattern and the situation.

There is *superposition of personal presents*. "Here" is the desk, but "here" also is my room, and even the city in which I reside; *always according to the personal perspective*. Thus I have "here" a book that I need at the present instant; i.e., I need not go elsewhere to buy or borrow it. But it is not "here" (within reach of where I am at the instant), but "there" in the bookcase, over to which I have to go. It is the same in the case of time. "Now" I am occupied with writing this line, but I am also "now" writing out the chapter on "dimensions"; indeed, I am "now" writing a *General Psychology* (in comparison with my past and future concern with other subjects).

The two branches. The two *branches* of inward-outward dimensionality extend from the personal present, "inward" into the person and away from the world, "outward" through the world and away from the person. The branches differ in characteristics; *along* each there are both gradations and qualitative shadings (Fig. 1).

The inward direction leads first to the regions of the person that are nearest his present; in so far as these are separate from the world while still confronting it, they constitute the personal *surface*. Further inward the personal *depths* are reached, i.e., those moments of the person that have no *immediate* reference to the direct external situation, but which represent in a specific way the self-contained being of the person. Further progress in the same direction signifies passage from the explicit and concrete to the implicit, the underlying, the potential. At the fictitious limit of this incursion into the personal depths is the complete indeterminateness and inner infinity of the person.

The outward direction covers the world-zones of the near and the far. Here too progress is from the definite to the indefinite, from the actual to the possible, until it finally lapses fictively into the wholly contentless, into outer infinity.

Those external features are "*personally near*" that maintain meaningful relations with the personal present; they surround it like an aura. The near region still possesses immediate personal relevance, and is the echo of contact or readiness for contact. Protection or danger is "near"; it is in this domain that the person expressively manifests his essential nature. "Near" is the goal of present striving; "near" is the just completed action whose consequences are still at hand.

That is "*personally distant*" which either lies *below the threshold* of personal relevance or is *split off* from the present and the near region in opposition. Thus the unknown seat-mate of a street-car passenger is "distant"; while yesterday, when he was still happy, is "distant" to the person visited by sudden misfortune.

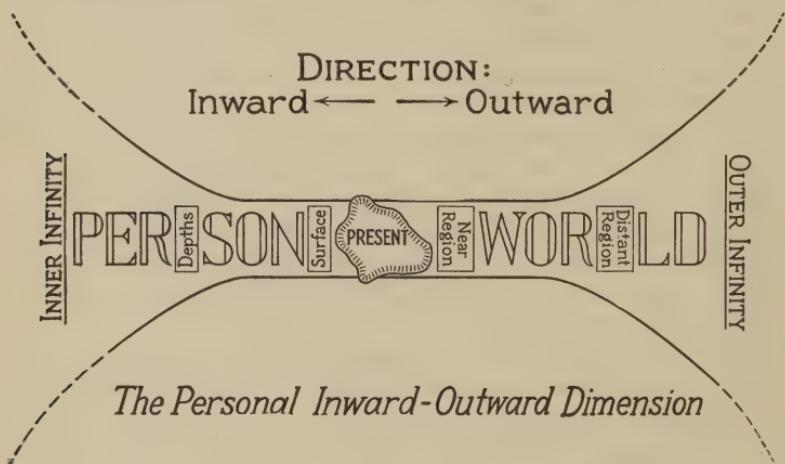


FIG. I

All the features of the inward-outward dimension that were discussed above are "*spatio-temporally neutral*. Just as "present" has more than a merely temporal meaning, so have "surface," "depths," "near region," "distant region" more than purely spatial significance.

Both examples show that the *graduations* along these dimensions need not be commensurable with objective measures of space or time. My seat-mate in the street car is distant from me while the friend toward whom I am riding is already near to me—in contradiction of the linear distance from both;—all that counts is personal relevance to my present life.

The attributes of the inward-outward dimension are also in themselves neutral in regard to *value*. "Superficiality" is to be considered inferior only in connection with certain definite personal trends;

from other points of view immediate contact with the world may be a requirement for the person and therefore have positive value. Similarly, "depths" may signify on the one hand that aspect of the individual which is still activated by rudimentary phases of primitiveness, and on the other, such features as are constitutive of his truest self, when it remains unfalsified by externals or by alien influences.

2. THE PERSON'S OWN DIMENSIONS

From the chief characteristics of the person are also derived the chief characteristics of his dimensionality.

The life of any individual is directed; this direction may, however, be *reversible* or *irreversible*. In the former case life consists in continual re-establishment of being, in the latter, in the continual production of new being. Conservative maintenance on the one hand and progressive development on the other are expressed dimensionally as the *spatiality* and *temporality* of the person.

The explicit separation of these two dimensional modes is possible, to be sure, only in abstraction; the living reality of the person always consists in a greater or lesser amount of stability *and* lability, of self-conservation *and* self-development. Consequently the person has spatiality that is temporally charged, temporality of a spatial order, common features and similarities of spatial *and* temporal attributes.

The person extends *spatially* in all directions, but not uniformly so. External limitation and internal structuring make extension especially prominent in three directions. But because of the very fact that this *tridimensionality of the person* is bound up with his essential constitution, it has a quite different character from the tridimensional space of Euclidean geometry, which is deprived of quality. The three chief personal dimensions, *above-below*, *before-behind*, *left-right*, are saturated with quality and are not interchangeable; and for each dimension the two poles are not distinguished solely by positive and negative signs, but in terms of quality and rank.

The *above-below* dimension is the principal axis of the person (the "vertical" axis). "Above" is a specifically human localization; in thought and speech "to be above" is the symbol of power and conquest. The *before-behind* dimension is highly charged with temporal dynamics; "forward" indicates personal aims; the individual's actions proceed from his forward surface; by his forward surface he presents himself expressively to the world. The *right-left* dimension produces the basic semblance of symmetry; the poles of this dimension are interchangeable to a certain degree.

The *time proper to the person* is first of all the span of single life-patterns. The present for each particular life-pattern includes

both duration and succession; think of the immediately lived rhythm of dance movements, or of a cohesive yet articulated act of will.

Personal time is *not simply unidimensional* like mathematical time. It would be so if it consisted solely of duration. Within it there would then be only differences in length. But in reality there are, for periods of equal duration, the most varied temporal *patterns*; for example, an endless number of rhythms, melodies, etc. This is possible only in multidimensionality. As a matter of fact, personal time also has its dimension of breadth; *simultaneity*. The salient features of a temporal pattern; for example, the tones in a melody, do not supersede the continuum of duration, but are superposed upon this continuum which simultaneously marches in the background of the event. Now if the melody is not composed of single tones at all, but of full chords (each of which signifies ample "simultaneity"), the temporal current of this life pattern accordingly increases in volume.

The irreversibility in the progression of a life-pattern stamps the sequent items dimensionally as "earlier and later," and with respect to their connectedness, gives them the signs of position "before" and "after." Only the fact that all these essential time references appear in a single, concrete life-pattern makes it possible for them to be applied to more inclusive personal periods of time and ultimately to the life-span. Duration progressively covers each single pattern of life and takes into itself new patterns and leaves earlier ones behind.

In this manner a peculiar double motion arises which divides off personal time fundamentally from mathematical time. The latter has uniquely and solely a forward direction. Essential to personal time, however, is its (unstable) *center*, the temporal present, which moves *forward* constantly under the steady conductance of duration, while its concrete contents assume the reverse motion, that is, *backward*, and continue to recede further and further. Consequently *future* and *past* are regarded in personalistics as "progressive" present (development) and "recessive" present (history). Combined with the actual present at a given time, they constitute the unity of the course of personal life.

All this is beyond the province of pure psychology. Even though he does not know it, the person has a future in the form of the fulfillment of the tendency of life, and though remembrance is lacking, he has a past in the sense of the continued effect of what has already been experienced ("mneme").

Since the direction of time is irreversible, all that is *purely temporal* in the life of the person is *unique and irrevocable*. The end-points of personal time, birth and death, are likewise unique and irrevocable. In this uniqueness lies that which is specifically *historical* about each personal life, the incomparable dignity of each instant of life. But

life itself resists the absolute character of the uniqueness because it constantly strives for reëstablishment and stability. Thus personal time contains features that offer resistance to its own incessant progression, and it thus seems to contradict the abstract concept of temporality while tinging it with some spatial flavor. Such an indication is the tendency to return into oneself by *rhythmatizing* the activities of life, by constant repetition of customs and habits. Finally, the irrevocability of the very bounds may be denied, both through action (by influencing the future after one's death, by stabilizing power in making wills, etc.) and through belief (in metempsychosis and immortality).

3. DIMENSIONAL INTERCOURSE BETWEEN PERSON AND WORLD

a. The dimensionality proper to the person is *extended* homogeneously into the world. The example just suggested of disposal by will is pertinent, for it assumes that "my" time will continue its passage after my death. It is the same in regard to space; the three personal dimensions of space become extended beyond the limits of the body. "Above" does not stop with my head but includes the hat upon it and the ceiling above it; "behind" is not only my back but also the wall nearest to my back.

b. But the objects of the world are not present solely in relation to "me" as the center, but have their own significance and their own proper dimensionality. From this fact results a personified *recentralizing* of all dimensions. The object (whether living or lifeless) has *its* before and behind, *its* past and future, etc., *about its own center*. Examples: The cupboard which, according to my orientation, stands "behind" me, nevertheless has its own "before" and "behind" that are independent of my position in relation to it. I may say of my great-great-grandchildren, "They will long since have overcome the turmoil of the twentieth century," meaning that what is the present for me is the remote past for the *new* center of reference of my descendants, which is set in *my* future.

c. None the less, it is not sufficient for the person to *attribute* dimensions to objects and persons outside himself; he must also come to terms with the dimensions of the world, and adapt himself to them. This is the occasion for a development in two directions; certain extensions proper to the person must be made manifest as proper *only* to the person, and are therewith *subjectified*; others become recognized as having community with others and are therewith *objectified*. Let four persons be seated at a square table; then the cupboard against the wall is to the right for one of them, in front for the second, to the left for the third, in back for the fourth; these dimensional specifications are thus entirely bound up with the subjects and their position

at the instant. On the other hand, the ceiling is "above" for all of them; this specification is consequently far more objective. It may be supposed that "above" even has *cosmic* objectivity for a naïve person; the sky is not above for him alone but for everybody; it is "really" above—while *his* objective world has no "right" and "left." In the cosmological system of science even the objectivity of "above" has disappeared. In this case qualitative differences in general, which we found to pertain to the personal dimensions, are sacrificed to objectification. All qualities of personal dimensions are likewise expunged from the space of Euclidean geometry as "merely subjective"; but in such space tridimensionality and perpendicularity are still objectified, and the symmetry arising from the personal right-left dimension is transferred to all three dimensions. Non-Euclidean geometry has at last banished even tridimensionality to the domain of subjectivity; its space is completely de-personalized.

A corresponding de-personalizing is exhibited in the quantitative features of dimensions. "Near" and "far," "large" and "small," etc., are determined altogether by personal relevance in the system of the person's own dimensions. But life in an objective world demands identification, comparison, and measurement,—and incidentally the de-subjectification of quantities.

It is a matter of moment for personalistics that these objectified dimensional modes and measures be again *introjected* into the system of dimensions proper to the person. The *life-space* of the mature adult is no longer so lacking in objectivity as the "vital space" of the infant, but it is also not as impersonal as the fictitious, decentralized, and non-qualitative space of mathematics. As a special structure "my home" is wholly centered about me; it is an expressive extension of my personality, it is attuned to my aims, and serves as my mete, bounds and shelter. At the same time, it is also articulated with sociological space (through limitation of property and through communality), with terrestrial and cosmic space ("my" dwelling-place in this street, this city, this country, etc., projection of my personal locality on objective maps, etc.), with mathematical space (through the application of measures that make "my" space "comparable" with all other space). But even while the relatively circumscribed space and locality of the person become coöordinated with these transpersonal spatial arrangements, the latter are introjected on their part into the now enlarged and refined space of the person; despite all its connections with objectivity it continues to be *the space of this person's living*.

The objective *time*-periods of the seasons, of the calendar, of holidays, as well as the incisive determinations of time by political world events (which affect all contemporary people in common), accordingly

belong also to the personal structure of *my personal life-time*. Thus, for example, the temporalization "before and after the world war" has constituted for all people of a certain generation the most trenchant landmark in their individual courses of life.

4. THE PSYCHOLOGY OF THE DIMENSIONS¹

Transition from the personalistic theory of the dimensions to the *psychology of the dimensions* is effected through the question: how does the individual *experience* space and time?

That which we have portrayed thus far as dimensional aspects of the person and the personal patterning of the world, extends far beyond the reaches of human consciousness; yet in principle each of these relations *can* become the content of experience at any given time.

One answer to the above question must be negative: there is no specific mental function by means of which the individual experiences his dimensions, that is, there is no special "space sense" or "time sense." Or to state it in positive terms, the individual can experience his dimensions and those of his world through all his mental functions. There exist the feeling of space, the perception of space, the idea of space, the thought of space, imagined space, spatial conations; and similar functions for time. *Space and time are psychologically interfunctional*. This of course does not silence the question as to how each of these special modes of experience is constituted. It must not be thought that independent departments of mind are involved at those times when space perception alone, imaginal space alone, etc., are considered; for it is always a question of the same personal space, the same personal time, being projected differently in experience on each occasion; and there are intermediate forms and transitions by the thousand between the various modes of experience.

This warning against pigeonholing must be made especially emphatic in the case of one particular problem with which the psychologist is deeply concerned: that of the *perception* of the dimensions. The fact that sense perception happens to be constituted under different "modalities" has led to the practice of cutting up the investigation of dimensions and treating visual space, tactal space, auditory space, etc., as independent. These special forms of psychological space are artificial fictions; indeed they are misrepresentations of the true nature of mind. In so far as the individual experiences space in general, this is the *one* space of his personal existence and world; specific sensory constituents of vision, touch, etc., contribute materially to this experiential structure of space, but they remain submerged and interdependent aspects. This is similarly true of time. *Space and time are psychologically intersensorial*.

¹ Cf. especially pp. 148 ff.

A second mode of attack for all psychological investigation of dimensions is furnished by the fact that there are two dimensional systems, one of the person and one of the world. I can experience my own spatiality and temporality in a subjectifying manner and the world in an objectifying manner. In either case I can experience the totality of the spatio-temporal structure, or an isolated dimension, a pattern, a direction, an extent. Moreover, I can apprehend the relations of both systems to each other as conscious content, as for example when I perceive, imagine, or think of the position of any external object in relation to my own position at the time.



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PART TWO
SENSE PERCEPTION

CHAPTER V

FUNDAMENTAL CONCEPTS AND PRINCIPLES

I. PERCEPTION AND SENSATION

When an original life pattern is present to an individual, the "present" for the person is indistinguishable from the "present" of the world (see p. 92). But if such an item is registered in specifically conscious form a cleavage occurs; at that instant the person experiences whatever is present as distinct from himself. This experience is called a *perception*.

In any act of perceiving the cleavage is begun but not completed. To be sure, the tendency is to apprehend something as distinct from the subject in its very nature. But in reality the content of the experience is dependent upon the present state both of person and object; and the tendency to separate the two factors is constantly being intercepted by the regressive tendency to reestablish a fusion of the person having the experience with the thing experienced. The purpose of psychological theories of perception is to ascertain the modes in which the various stages of this incessant process of separation and fusion occur.¹

The "thing" that is apprehended by perception may be "myself" in my present state, or rather, some particular feature of my present state. This is perception of self or inner perception. Or the thing may be something outside myself. In that case there is outer perception. The latter is the proper theme of the present part of the book, though at times the other variety will intrude from the background of our inquiry.

We may obtain additional basic insight by applying our conception of the *salient* and the *embedded* to perceptions and their objective correlates. If an *objective* situation in which a perception occurs is analyzed, the following attributes of the situation come to light: dimension (away from, toward, behind, lasting), kind (brightness, mass, odor, vibration etc.), structure (objects, events), and finally, ultimate *physical and chemical* elements observable in these attributes

¹ In this connection psychology intersects epistemology at many points but without coinciding with it. For the problem of psychology is: How does the individual *experience* the items presented?—that of epistemology is: What grade and kind of objectivity is to be ascribed to the perceptions?

(a certain light radiation, a degree of heaviness, an odoriferous substance, the vibrations of a string). A salient aspect of a situation, in so far as it participates in the production of a perception, is commonly called a *stimulus*. Since Fechner's time this term has been reserved for the elementary physical processes to which objects are reduced by analysis, and which may be expressed in terms of definite numerical quantities.

In this extreme physicalism no adequate distinction is made between an objective event that is actually thrown into relief as a unitary structure against the diffuse total situation, and one that is made salient in thought by the theorizing observer who abstracts it from the context of his participation in the situation. Only in the first instance should the event be called a "stimulus"; in the second it is at best a "*stimulus-moment*" or "*stimulus component*." A full chord that resounds in the stillness is a stimulus; a single tone of the chord is only a stimulus-moment.

On the *psychological* side as well we encounter a similar distinction. A single perception exists at first in consciousness as a *unit*. When I pick up an apple and look at it the perception "here is an apple" is a total experience. Even naïve introspection yields a number of experience-moments: firm, round, odorous, red-colored. The psychologist is able to produce the analysis further. He may conclude, for example, that the perception-moment "firm" includes not only the experience of contact with my epidermis but also the experience of muscular resistance of my hand as I grasp the apple; that the impression of color contains a certain number of distinguishable shades, etc.

This is the position that was triumphantly maintained for a long time under the elementaristic view in psychology; it was believed that at the final stage of such analysis of perceptions the true mental "elements" were discovered, and the name *sensations* was applied to them. "Sensations are the simple constituent elements of perceptions." This is the principle that made the word a stereotype for the classical period of our science which developed from physiology and psychophysics, and that was taken for granted for decades.¹

Although the psychological hypothesis of elementarism embodied in this principle is now no longer credited, it is nevertheless necessary to indicate its influence. In the first place virtually the whole literature of psychology during the past hundred years made use of this concept of sensation, with the result that everybody making contributions to psychology must become familiar with it. In the second place, numerous results that were obtained from the analysis of sense perceptions retain, it is true, a lasting significance; these are not

¹A quite different, and romantic, conception of the word "sensation" will be discussed later (p. 116).

simply to be cast aside because of the altered theoretical approach, but only require reinterpretation and supplementation through new considerations that involve a different attitude.

The older concept of sensation was of utility in establishing, by means of suitable working hypotheses, the elementary relations of sensory experiences to physiological and physical processes. For each particular kind of sensation a particular kind of physiological process was sought that might correspond with it; at the same time the numerical value of the exciting physical stimulus was determined. Without this concept, even though it was over-simplified, the accomplishments of men like Helmholtz, Fechner, and Wundt would not have been possible.

It also came about that within the area of mind the multiformity of our perceptions was first disclosed by this minute analyzing of complex structures, and many a previously unknown branch of perception was discovered (e.g., sensations of position, sensations of equilibrium, sensations of vibration).

The method reached its limit in the fostering of the belief that it was possible actually to construct perceptions out of the sensory "bricks." The fact that in the perception "apple" a number of sensory aspects can be demonstrated, *viz*: firmness, color, shape, odor, was held to be identical with the notion that the perception "apple" *consisted of* these sensations, and was merely a summation of them. This theory of perception naturally aroused opposition in which emphasis was placed upon the unitary wholeness of every perception.

Although his views were essentially those of elementaristic psychology, Wundt himself took the first step in this new direction. He assumed that the simple elements were the basic mental phenomena, but advanced the contention that consciousness did not simply add them together but entered into a *creative synthesis* with them; that the product of combination was something novel as compared with the mere aggregation of the parts. Thus in the accompanying figure the sensations produced by individual black dots constitute the raw material of the perception; but the fact that we do not see simply an aggregate of dots, but the pattern "square" is due to creative synthesis—just as in chemistry two atoms of hydrogen and one atom of oxygen combine to form one molecule of water, which has entirely new properties. Nevertheless the theory of creative synthesis did not call into question the *prior existence* of the sensory elements. It remained for the theory of Gestalt to do this.



FIG. 2

II. "GESTALT" AND "UNGESTALT"

In the concept of "Gestalt" we reach perhaps the most important category in recent theories of perception. This concept was not first discovered by the "school" of Gestalt psychology (Wertheimer, Köhler, Koffka, *et. al.*), for other investigators preceded and were contemporary with them; thus von Ehrenfels (at the very start), Karl Bühler, Krueger's Leipzig group, and the present writer. The Berlin Gestalt school¹ has however exercised vast influence on present-day science through its unquestionably successful attempt to give, in the light of this concept, a new theoretical orientation, first to the psychology of perception, but also to psychology in general (and at last even to physics, biology, and other sciences). This activity made it possible for other psychologists to gauge the utility and effectiveness of the concept of Gestalt without disregarding its one-sidedness and its limitations.²

Here we are interested solely in its application to the *theory of perception*. Perceptual items make their appearance as "Gestalten" ("patterns," "configurations"), that is, as totalities that are internally organized and externally marked off from their surrounding field. These totalities are primitive; they are not produced as the result of summation or synthesis.

There are perceptual Gestalten in which no subordinate parts are present; a white square on a black field, the sound of a violin note. Even though elements are discoverable in such Gestalten on *subsequent analysis* (a number of sensations of white and black in the square, a key-note and several simple overtones of the note from a violin), enumeration of them is not a proper description of the experiences "square" or "violin note." On the contrary, this is simply replacing them by a series of mental data of a different sort.

There are also perceptual Gestalten that have constituent parts given in them as in the perception of them, so that attempts to reduce them to elements are more plausible. Such a formation is a square outlined in dots (see p. 111), or a melody experienced as a succession of tones, or the tactual impression of a letter in Braille composed of bosses. But here the primitive character of the experienced Gestalt is attested. For the constituent parts are not present as elements (*i.e.*, as independent, isolated mental data), but *solely* as members that make up the pattern. They derive their significance for the mind only

¹ Originating in Berlin, now chiefly flourishing in the United States.

² The two most important books dealing with the fundamentals of Gestalt-Psychology are Martin Scheerer's *Die Lehre von der Gestalt* and Kurt Koffka's *Principles of Gestalt Psychology*; the former depicting and criticizing the doctrine from the outside, the latter developing an entire psychology under the aspect of "Gestalt theory."

from the totality of form, which imparts a definite placement, function, and emphasis to each individual member. That is why "one and the same" objective tone (one that corresponds to a certain physical frequency of vibrations) is experienced quite differently at different times, accordingly as it occurs as the tonic in one melody, the leading tone in another, a suspension in still another. This specification by the total pattern of the melody may be so insistent that even by paying the closest attention the identity of the three physically identical tones cannot be experienced. Similarly in the square made of dots *one* dot is present for the perception only as a corner dot, another as the mid-point of a side, etc. In short, even those components of a Gestalt that may become salient have this property only in their functional character ("as" so-and-so), which results from their significance within the total pattern.

This ascendance of the perceptual Gestalt over its parts shows up still more clearly in its complete *independence of specific sensory material*. In music this phenomenon is known as "transposability"; a melody remains "the same" when it is transposed from C major into C-sharp major. In the latter key the individual tones will be clearly different, with no elementary "sensation" the same as those previously present; yet the pattern of the melody is not disturbed by this fact.

The range of the phenomenon includes more than music. The perceptual pattern of an equilateral triangle remains the same in all its properties though the teacher draws the triangle on the blackboard with white chalk while the pupil draws it on white paper with black ink or cuts it out of brown cardboard. That is, the specific impressions of brightness, color, and size are irrelevant to its character as a Gestalt. Transposability even passes the limits of a given sense-department; I may apprehend the shape of a ball visually *and* tactually, or the rhythmical pattern of movement of the train in which I am riding, with bodily sensations and ear alike.¹

Even the *lack* of sensory material need not impede the perception of a Gestalt; gaps are adequately filled in by the total Gestalt. We usually have no suspicion of how imperfect our perceptions are, of how much extra is added by the formative tendency of the sensory Gestalt. An artful sketch composed of a few lines carries the compelling suggestion of a horse; and in the silhouette (Fig. 3) the *collar* is seen in well-nigh sensory clearness although there is no trace of its outlines against the white ground. The noises transmitted to us by the



FIG. 3

¹Cf. Chap. VIII.

telephone are formed at once into words and sentences; only when an unfamiliar proper name comes up unexpectedly are we informed of the paucity of the purely acoustic sensory material, because then the Gestalt is not successfully formed.

Related to this principle of the "completeness of the Gestalt" is the "law of precision" (*Prägnanz*). A perceived Gestalt shifts the sensory material according to the clearness of impress of its characteristic structural features. I can see a line drawn freehand "as" a straight line, discounting its unevenness. If I hold a ticking watch to my ear and hear its ticking "as" three-part or "as" four-part rhythm, the first of each group of three or four ticks assumes an increased intensity as the chiefly accented beat.

If Fig. 4 is presented to a subject with the instruction "Look at *this curve* (a) and draw it from memory," the form will be much more rounded, as b; if the directions are "copy *this angle*," the form will be more angular, as c. In each case the point of view of the Gestalt imposed influences the manner of seeing and hence the reproduction as well (experiment by Martha Muchow).

The widespread significance of the concept of Gestalt for the psychology of perception inheres in what has been said. But is this concept exhaustive? If the Gestalten are made the true fundamental phenomena in perception, carrying their own laws, the danger arises that we shall slip back—though on another level—into the elementaristic view that the Gestalt concept was supposed to supersede. The Gestalten themselves would be regarded as *elements* out of which all mental activity is composed, just as was formerly predicated of sensations. Therefore this concept must be supplemented. Perceptual Gestalten are autonomous on their level; they *give* to the sensory material organized within them the laws of precision, completeness, transposability, etc. But they are not autonomous for levels above themselves; on the contrary they *receive* their laws and even their existence from a superordinate principle, the *person*. "*No Gestalt without a 'Gestalter'*" (former of Gestalten). Perceptions occur as Gestalten because the person as a whole is able to apprehend the world only in separate wholes of a lesser order. Sometimes the perceptual Gestalt may possess such impressiveness that the individual perceiving it simply has to accept it. The cause of this lies primarily in the objective stimulus situation in which definite boundaries—of single things, single processes—are laid down; perception by Gestalt then signifies the adaptation, necessary for life, of the person to the structure of the world.

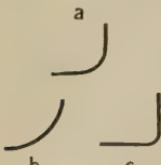


FIG. 4

Wertheimer suggests a telling example: If I look out the window I do not "see" thousands of colored spots and confused lines, but I see houses, trees, people, animals, etc., that is, Gestalten pure and simple.

In other instances, as our examples have already shown, the coöperating spontaneity of the person is clearly recognizable both in the occurrence of the single perceptual Gestalt and in the alteration of Gestalten despite the persisting constancy of the stimulus. It depends upon *me* whether I arrange the ticking of my watch into three-part or four-part rhythm. And the detective sees something, on the basis of his professional attitude, as a "finger mark," thus as a salient Gestalt, which is not in any way noticeably separable for other people from the neighboring smudges.

But if the patterning of a Gestalt-perception is conditioned at least partly by the person himself, the further question arises as to how the perceived Gestalt becomes assimilated to the totality of the person. It becomes manifest that within the sphere of perception the Gestalt represents only one terminal pole of a series of states, at the other pole of which is the undivided unity of the person. *It is the series that ranges from maximum salience to maximum embedding.* Gestalten are simply the most salient phenomena of perception.

That there is something else in perception besides Gestalten has been recognized by Gestalt psychology itself, but it has usually sought to formulate it with as little disturbance as possible to the predominance of the Gestalt. Such perceptual formations as may be experienced as Gestalten only with difficulty are called "poor Gestalten"; moreover in Gestalt psychology that area of perception that circumscribes the Gestalt is called the "surrounding field,"¹ and emphasis is laid upon the complementary relationship between figure and ground.² Thus we must endeavor to free these data from actual or implied value judgments. A diffuse red glow in the sky, the noise of the city as it comes to me from a certain distance, a gentle breeze blowing about me, the fragrance of flowers in the room which I enter—all these are quite as unquestionably objects of sense perception as they are undoubtedly *not* Gestalten; for they lack both outer contours and inner organization. And such "Ungestalt" perceptions are, as our examples show, not present in any sense merely as bare backgrounds for Gestalten, but also as *independent items of experience*. To be sure, they may become surrounding fields, e.g., if black smoke should become salient against the reddish glow in the sky, or if the sound-pattern of an approaching wagon is detached from the diffuse street noises.

¹ *Umfeld*.

² Cf. especially Rubin.

That there are all possible intermediate stages may be conveyed through examples.

(1) A succession of full chords, if it becomes salient against the previous and subsequent silence, and if the single chords become salient against one another, clearly bears the character of patterning (Gestalt). But if the same chords accompany a melody they lose their patterning and acquire the nature of ground. The contour of the melody is clear, definite, and sharp in contrast with the sound of the harmony that supports it and that seems to fill space in a more diffuse manner.

(2) If I view a landscape from a mountain, the portion that falls upon my area of clearest vision in the center of the retina is highly structured and rich in shadings. That which is perceived by the periphery of the retina becomes constantly less clear and more like ground, merging ultimately with what is without contours; with the head in a certain position I do not have boundaries or edges to the field of vision as facts of perception.

The scale ranging from Gestalt- to Ungestalt-perception must not, however, be regarded merely in terms of diminishing clearness and hence diminishing importance. The *positive* significance of the Ungestalt arises from the fact that it is at the pole of *maximum embedding*. Precisely because the perception is not salient does it flow into the totality of the personality, penetrating it, and becoming a part of it! The abrupt division between outer and inner perception becomes more and more obliterated through the increasing decomposition of the patterning. Applying this to our examples, the wind that blows about me, the water in which I am swimming, the fragrance of flowers in my home, these are not only the separate something that confronts me with salience, but it forms my domain of life, belongs to my "biosphere," is incorporated into my total mood and total bodily bearing. The sounding chords do not chime in only with the melody but with me as well; the space through which they diffuse is also my personal space, their rhythm seizes me. The unclear field of vision into which the landscape lapses is not bounded, simply because it is an indissoluble component of my field of existence at the instant.¹

On what does the location of a perception nearer to the Gestalt pole or to the Ungestalt pole depend? The *objective* constitution of the

¹ Here we strike a *second* conception of "sensation," outlined very early—by Herder and the German romantics—and lately taken up again by Heinz Werner and others. According to it, "sensation" is perception embedded in the person, the subjective total resonance of the person under a sense impression. If the romantic term "sentimentality" is contrasted with the "difference sensitivity" of psychophysics—both derived from the identical root "sense"—the divergence between the two conceptions of sensation becomes clear.

It appears very unlikely that by reintroducing the romantic concept of sensation (Ungestalt-perception) one could disregard the usage of scientific psychology and physiology that has been customary in half a century. Since this usage of the word "sensation" will never be relinquished, the alternating and mingling of two so different meanings would arouse confusion.

stimulus may itself be more or less structured and hence more effective as Gestalt or as Ungestalt. Gaseous olfactory stimuli are unbounded and without form, while visual stimuli have clear contours; as a result olfactory perception is by nature more subjective and embedded than visual perception. Corresponding differences between stimulus conditions are also possible within *one* sense-department, as our examples of the melody and the background of harmony, the column of smoke and the ruddy glow in the sky showed.

But with the same identical stimulus *personal* conditions may produce now this, now that mode of perception. The coloring of a sunset, which fills one observer diffusely, may be viewed by another, for instance, a farmer, as a salient and organized sign of the weather to be expected on the morrow. Changing dispositions play a part; in a state of fatigue noises about the house may be experienced merely as an encroachment upon the personal state, or under other conditions they may be comprehended as salient in terms of their objective import.

Changes of attitude may be tested experimentally in the following way: The subject is presented with the same stimulus object, under different instructions that at one time approach a disinterested, coolly calculating apprehension of the object, and at another an attuning of the entire self, both bodily and mentally (Elisabeth Wohlwill).

III. DIVERSITY OF THE SENSES

I. SENSE-MODALITIES

a. *Pluralness.* The opinion is very ancient that man has "five senses." This includes the statements (1) that sense perceptions *are divided up* into domains that are wholly distinct from one another, (2) that there are *five* such domains. Present-day science cannot credit uncritically either of these two statements. The first must be materially expanded, the second corrected.

In the popular interpretation the term "senses" is taken to mean that these are quite independent and separate faculties. Contrariwise the scientific term "sense modalities" signifies that the unitary personal function of perceiving occurs in various *modes*, and that these modalities, while standing out distinctly from one another, nevertheless reveal a variety of interrelationships and interconnections. The "unity of the senses" has even been openly advocated (H. Plessner, H. Werner).¹

We shall first deal with the *plural number* of the sense modalities. That they are plural is set forth under various points of view: *physically* different kinds of stimuli operate, *physiologically* there are

¹ Aristotle knew the "*αἰσθητήριον κοινόν*."

different receptors (the sense organs), *psychologically* it is a question of different ("sensorially specific") qualities of experience.

b. The stimuli. Any energy-emitting object that arouses sensory impressions in man is called a "stimulus source." The stimulus source either makes a direct contact with the surface of the body or radiates energy to the sense organs from a certain distance. To the first group, of *contact stimuli* belong objects that exert pressure, that excite the sense of touch, and liquids that arouse sensations of taste in the tongue and mucous membrane of the mouth. Clear-cut *distance stimuli* proceed from visual and auditory stimulus sources; luminous and sounding bodies operate at some distance from the perceiver. It is not they themselves but merely the periodic vibrations produced by them, propagated through a medium, that excite the eye and ear. The sense of smell occupies an intermediate position. While the odoriferous object may be at a certain distance from the perceiver it must exude material particles (in a gaseous state), so that sensations of smell are awakened only through immediate contact with the nasal membrane.

The following stimuli may operate in either way: (1) temperature stimuli; sensations of warmth may be aroused both by objects that are in contact with our skin and from those that radiate warmth from a distance (a stove, the sun); (2) vibratory stimuli; we are able to perceive the vibration of the automobile in which we are sitting as well as that of a distant railroad train (through the medium of vibrations in the air or the ground).

c. Sense organs. Considered physiologically and anatomically the division of the senses is particularly clear-cut, at least for the four modalities of vision, audition, olfaction and gustation; for each of these there are definite, narrowly bounded regions of the body that intercept and digest the appropriate stimuli. Physical light vibrations, to be sure, strike the body in all its various regions, but only those that impinge upon the eye arouse visual sensations; this is similarly true for the ear, the nose, the inside of the mouth. These sense organs are equipped with *specific* receiving apparatus called *receptors* that are adapted in a particular manner to definite kinds of stimuli. Thus the retina contains chemical substances that are extremely sensitive to light; in the inner ear there are microscopic structures that, acting as resonators, select and transmit the sound vibrations of the air, etc.

The sense organs are divided up into parts that take care of *transmitting* the stimulus to the sensory nerve while excluding foreign stimuli, and into true *perceptual* mechanisms of a neural nature, that consist of the peripheral termini of the *sensory nerves*. The latter mechanisms lead the physiological process of excitation (through certain junctions) to the various regions of the central nervous system (spinal cord, brain).

Thus in the eye the transmissive implements are: the pupil, which selects the rays to be admitted, the lens, which projects the image on the back wall of the eye, the vitreous humor, the chemical substances in the retina, which react with extreme delicacy to every change of illumination. The physiological processes, selected and prepared in this way, spread to the true organ of perception, i.e., the delicate dendrites of the optic nerve which extend into the retina, and are conducted onward as neural excitations. Similarly the tympanum and ossicles in the ear are transmissive organs that convey air vibrations to the inner ear, where an elastic membrane (the cross-striated "basilar membrane" of the cochlea), acting as a delicately organized resonator, transforms the vibratory processes into excitations of the auditory nerve. The receptors for taste stimuli are formed by the so-called "taste buds," which occur on the surface of the tongue and palate. The true olfactory organ consists of small patches of the internal mucous membrane of the nose.

The bodily basis for those perceptions which in popular usage are ascribed to the "fifth" sense, called the "sense of feeling," is not so definite. For in this case it is not a *part* of the body that collects the impressions at a focal point; on the contrary the entire body has some part in receiving them; above all the outer surface of the body, but internal organs as well. And not only can we sense warmth, pressure, contact, vibration, movement in *different* regions of the body, but there are sense perceptions that are in no way subject to exact localization, so that we must look upon the body, in its diffuse totality, as a sense organ. For example, it is meaningless to inquire with what region of the body we sense the lessening of air pressure on high mountains, the radiant heat of the sun, the lapping of water against us while bathing, the vibrations while riding in an automobile.

It is only an apparent contradiction when physiology nevertheless discovers specific "organs" for contact, warmth, cold. That is, it has been determined that on touching the skin slowly with a light, pointed object (such as the point of a horse hair), a perception of contact occurs only at definite places on the skin while nothing is noticed at the places lying in between. These sensitive spots are called "pressure spots." When pursued in the same way with a cold metal stylus the investigation yielded "cold spots," with a heated stylus "warm spots," so that the total surface of the human skin was parcelled out into a *mosaic of spots* representing the three groups of such elementary sense organs. At this point we need simply recall the fact mentioned above, that contact, cold, warmth, may appear either as Gestalt perceptions or as Ungestalt perceptions. Thus if I assert that I am touching a hard, cold object, this *salient* contact and temperature perception is possible only by way of those spots having peculiar sensitivity for contact or cold and serving as raw material for the Gestalt perception. But it is a question of spots having peculiar,

not *exclusive* sensitivity. I perceive the coldness of a metal stylus not because the spot of contact is sensitive to temperature in contrast with its surroundings, but because this specific and local temperature perception *becomes salient* against the vague totality of my experience of temperature. It is the same with contact and warmth.¹

But the old-fashioned "fifth sense" involves still further modes of perception that interest us here only with reference to their physiological basis. It is not a question of stimuli from without impinging upon the fancied passive body of the perceiver, and being conveyed through its surface, but of an *active relationship* between the individual and his environment, through the alteration or maintenance of his bodily behavior. Here there is a very close connection between sensory and motor processes. Movements of the limbs or the body as a whole are not only *executed* but also *sensed*. "Sensations of movement" occur if actual movements are produced; "sensations of position" or "sensations of strain" if the body or individual limbs are maintained actively in a given position. Neither group may be clearly distinguished from the other; the much used term "*kinaesthetic sensations*" covers the entire class. The organs for these sensations are probably sensitive nerve endings in the muscles and joints.²

But in perceiving the position and movement of one's own body in space the activity of a specific organ is involved, detailed knowledge of which has been available for only a few decades. That is, the inner ear is not solely an organ of hearing; it consists of two quite distinct structures, one of which, called the cochlea, serves in hearing, while the other represents a kind of *equilibrizing mechanism*. The latter is formed of three crescent shaped (called "semicircular") canals that are perpendicular to one another. The liquid which they contain plays upon nerve endings, the stimulation of which depends upon the position of the head. Since the position of the head conforms to a considerable extent to the position or movement of the whole body, the stimulation of the semicircular canals serves to report changes of bodily equilibrium. The elementary reflex involved is of significance physiologically; stimulation of the semicircular canal lying in a given plane elicits those limb movements or trunk adjustments that are necessary for restoring the disturbed balance. Such regulatory movements

¹ This statement will probably be contradicted by physiologists. But we maintain that psychology cannot throw overboard fundamental facts of the development of the personal totality for the sake of a physiological hypothesis based entirely upon the mosaic principle. The *experience of temperature* is not a patchwork experience; the physiological theory of sensation must do justice to this psychological fact, to the extent of eventually revising its hypothesis.

² Mention should be made of the physiological theory that kinaesthetic sensations in the muscles are not mediated by true sensory nerve endings, but that the same motor nerves that contract the muscles also have a sensory function by a process of reverse excitation, and produce what are called "feelings of innervation." The question is entirely one for physiologists to decide.

occur automatically in walking on the deck of a rocking ship or in rotary vertigo. If the semicircular canals are affected by a disease of the inner ear, disturbances of this regulatory power occur. Similar conclusions have been made from investigating animals; for instance, if a semicircular canal of a pigeon is severed, acute disturbances of balance result.

d. Specific domains of sensory experience. We come at last to the truly *psychological* question, as to whether the manner in which we *experience* the different stimuli by means of the various organs, gives us the right to speak of a plural number of senses. Without doubt this question is to be answered in the affirmative. Among the most impressive facts of our mental life is our ability to "take in" the world in different sensory modes; some domains of perception are highly salient with respect to one another, while all the impressions belonging to *one* domain belong together.

As an experience, a tone is different from a color or an odor; the diversity of the three perceptions would not consciously appear less for lack of knowledge that they were mediated through three different sense organs. The "hardness" and "warmth" of an object are also qualitatively different as conscious phenomena, although they are perceived with the same part of the body, the hand, for instance, and the naïve person knows nothing of the fact that on one occasion the pressure spots, on another the warm spots of the skin, are operating as specific organs.

But if we look at each modality of perception as such we get a different picture. Two colors may of course differ markedly from each other, but this diversity has another character than that between colors and tones. A bright, saturated red and a dirty pale green may even be diametrically opposed; nevertheless they have a close psychological relationship simply because they are colors, that is, through their common classification under a domain that is continuous in itself. I can change the one impression of color into the other by means of a gradual series, without thereby breaking through to a different world of perception.

This experiential unity of each sense modality centered the concern of the psychology of perception almost exclusively in "*specific sensory phenomena*," that is, in those experiential contents that occur *only* within a single modality and that characterize it distinctively.¹

2. THE SPECIFIC RELATIONSHIP TO OBJECTS AND THE "SPECIFIC ENERGY" OF SENSES

Every sense perception is essentially bound up with its intended object. This relationship is basic to those principles that we laid down

¹ See Chap. VI.

above (pp. 74-77) for all experience; the object *appears* in the perception, but it does not appear *completely and adequately*. Two species of problems for the psychology of perception result from this inadequate correspondence. Where the object of perception appears different than it is, we speak of *sensory illusions*; where the object enters into perception only partially and crudely, we are dealing with the *limits and limens* of perception. Both topics will be treated in detail in Chapter IX.

Here, however, we must consider a general theory that makes the specificity of each sense modality absolute, and consequently denies any correspondence between the content of perception and the perceived world. It is the doctrine of "specific energies of senses."¹

This theory, formerly highly influential and frequently debated, was set forth by Johannes Müller and developed by Helmholtz and many others. It proceeds from the fact that each sense modality is correlated with a definite sense organ, and with it alone; the experience of color solely with the eye, that of sound solely with the ear, etc. This correlation was interpreted as an unique *dependence* of the psychical experience *upon the functioning organ*, and consequently as the *independence* of the experience *from the objective stimulus*. According to this the optic nerve has "specific energy" for mediating experiences of light and color, no matter what kind of stimulus excites it. It reacts to yield visual experiences not only when objective rays of light impinge upon it, but also when pressure is exerted upon it, when an electric current is conducted through it, etc. Conducted through the ear, the same electric current arouses the experience of sound, and when through the tongue, that of taste. *Hence our sense impressions give us no inkling of the nature of the stimuli, but only of the specific modes of response of the particular sense organs!*

If this theory were a correct and complete interpretation of the facts it would lead to a curious result. Sense perception would lose its true function, that of giving us a picture of the *objective* world, and would instead produce a ghostly world of appearances that depended entirely upon the organization of the sense organs; even worse, not a world of appearances but *as many* of them as there might be sense organs having specific energies; for the color-world of the optic nerve would have nothing to do with the sound-world of the auditory nerve.²

Let us indicate in a few words in what respects the theory is valid and in what respects it is inadequate or misleading. We can be all the

¹ Cf. the monographs of Weinmann and Löwy.

² The purely epistemological question as to whether and to what extent the doctrine of specific energies is connected with the Kantian doctrine of the *a priori* cannot be discussed in detail here. In his day J. Müller thought he had established, with his law, the physiological evidence for the Kantian theory; others have justly denied this consequence.

briefer here, since the observations on sense perception in the following chapters involve the arguments against J. Müller's theory. There are two indisputable fundamental facts.

(1) Every developed sense organ has its "specific" energy, that is, it can yield sensory experiences appropriate to it alone. (We can never see with the ear, smell with the eyes, etc.)

(2) Every sense organ reacts in its "specific" manner to stimuli of different kinds, *in so far as* these stimuli excite it at all.

But further considerations must be added, that lead us far afield from J. Müller's hypothesis.

(3) The "in so far" in statement (2) is crucial.

The specific organs are normally attuned to specific stimuli only; the eye to light vibrations alone, the organ of hearing to sound vibrations alone, etc. We must therefore distinguish between *adequate* and *non-adequate* stimuli, which Müller's theory neglected to do. To be sure, *if*, in an abnormal situation or in a highly artificial laboratory experiment, the retina is stimulated not only by objective light vibrations but by a blow or an electric current, it will respond with the experience of light specific to it. But *that* such a stimulus should impinge upon it is, in comparison with the stimulation adequate to it, a very infrequent exception; the eye works for adequate stimuli and is normally closed against inadequate stimuli through various protective mechanisms. Moreover, the eye can respond to adequate stimulation with a finely graduated and ordered system of impressions, but to an inadequate stimulus merely with a dull and choc-like experience of light.

(4) Thus there are normal modes of correlation between definite kinds of stimuli and definite sense organs. These relationships are manifestly to be taken to mean that every sense organ is *set* for certain processes of the objective world. There is no such thing as indifference of sensory experiences to objective reality. The specific attitude of the sense organs is naturally so firmly established that they function in the same way even if they should be activated non-specifically, that is, by an inadequate stimulus.

(5) The close connection between sense perceptions and the world of objective stimuli (which was denied in effect by the upholders of the theory of specific energies of senses) may be completely explained only through *genetic* considerations; these show how sense organs and sensory experience have gradually acquired their mode of functioning and modalities through constant contact with the situations and stimuli of the world that are relevant to life. It is actually true that "the eye developed through being confronted with light," etc. (cf. the following chapter).

(6) Finally the assumption is false that human sense perceptions

can be finally and definitely *divided up* into the different sense modalities.

If the mere existence of several qualitatively different senses were the whole story, not only the unity of the perceiving person but also the unity of the world that is perceived, would be irrevocably disrupted. It would be a different person each time, who had the experiences of sight, hearing, smell, etc.; and the visible world would have no connection whatever with the audible world, nor the latter with the touchable.

But without regard for the variety of his domains of experience, man is *one*, and his world, without regard for the variety of perspectives and sectors in which it is presented to him, is a unitary structure. This principle of wholeness applies to human perception in a number of ways that are to be treated in detail in Chapters VI and VIII.

CHAPTER VI

THE DEVELOPMENT OF THE SENSES

The most primitive forms of life, even plants,¹ possess the capacity to react to external stimuli. This disposition, which is common to all life, is subject to a marked development in which two stages are clearly distinguishable.

At the lower level sensitivity is confined wholly to the organism's *vital* functions, through which adjustment to the environment is immediately regulated. At the higher level this is brought about by *objectifying* and *introceptive* apprehension of existing situations. While the "lower" sensory functions are essentially common to animals and man, the "higher" functions exist in a clear-cut way only on the human level.

Scientific psychology has usually avoided the use of value terminology ("higher" and "lower"). But since these terms are here used to indicate *development* their use is entirely justified. For the vital stage is not only earlier in time in the individual and the race, but also lays down the ground from which the other stage later rises as a differentiated superstructure.

I. SENSITIVITY

At the beginning of organic development there is as yet no multiplication of senses, nor indeed stimulus-susceptivity (sensitivity) as an independent function. There is merely *sense-motility*, i.e., a diffuse capacity to respond to stimuli through movement. In the lowest unicellular organisms this capacity is a property of the organism as a whole; the protoplasmic mass is *at once* the organ of sensation and movement. Whether or not these primitive reactions constitute true "psychological" data, that is, consciousness in however dim a form, it is in no way possible to determine.

Development beyond this level involves differentiation of function, makes way for the appearance and growth of the factor of experience, and especially of independent perceptual experience. The original unity of sensitivity and motility becomes refined on the one hand and loose on the other.

The refinement of sense-motility is revealed in the fact that certain organs become the principal instruments of *both* functions at the same

¹ Which we are leaving out of consideration.

time. Thus in lower forms of life we come upon the development of ciliated cells, and similar organs, which because of their motility are better adapted to making contacts with the environment and hence to *receiving stimulation* than are the sluggish masses of the organisms. An example on a higher level is furnished by the feelers of insects, which considerably extend the range of contact through their length and versatility. In man the entire skin is of course sensitive to contact, but in *exploring* objects, contact sensations from only the especially motile upper extremities—and above all, from their most delicate precision instruments, the fingers, are utilized. Touch is thus the *first specific sensori-motor function*, derived from the original generic sensori-motor functioning of the body as a whole. It is, as it were, the basic contrivance by which the organism commences through its own activity to conquer the immediate environment.

The great significance of this contrivance is also shown in the development of each individual. Before the infant has completed its first year it has developed *grasping* as an assuredly crude, but exceedingly effective means for sensori-motor orientation.

The connection between sensitivity and motility on the higher level is not limited to touch. The functioning of the eye is not due solely to the delicate structure of the retina, but also to the varied capacity for movement of the eyeball (see p. 148).

The sensori-motor combinations here outlined involve still another developmental feature, the appearance of an interrelated system of organs. At certain stages in the animal series the *nervous system* takes over the task of transforming sensory excitations into motor impulses. The whole body with its diffuse activity and also the single organ that both receives stimuli and effects movements, cease to have charge of these coördinations as soon as these become more highly developed. The motor reactions of a sensory stimulus do not remain restricted to the receptor (for example, it is not only the eye that moves upon light stimulation, but also the head, body, arms, etc.); nevertheless the motor response must be suitably arranged, proportioned, and graded. This is made possible by a *central* switchboard consisting of complicated connections between the motor and sensory nerve trunks. Such an apparatus appears first in the more simple form of a ganglion or nerve cord to which sensory impulses and from which motor impulses are led; later in that of the *brain*, which spreads out above this central cord. The highest animals show above all an increase in the relative importance of the brain, which finally receives its greatest elaboration in man. In the human brain itself genetically older and newer parts may be distinguished (paleëncephalon and néëncephalon).

This development has a dual significance for the relation between sensitivity and motility. On the one hand it makes possible the finest coöordinations and regulations of their interactions; on the other hand, however, the central nervous system sets up a kind of barrier between the two and thus promotes their *separation and independence*.

Consequently it is only on the appearance of a central nervous system that *sensitivity may become salient* against motility, that the sensori-motor unity of touch is transcended, and that separate sense-departments develop, and with them, true contemplative *perception*.

This development of the separate senses also follows the path from diffuse general sensation to specialized perceptions that we observed in the case of touch. We shall trace this along three parallel lines.

Objects that are concerned with *nutrition* exercise a *chemical* effect upon the organism; hence a special excitability by chemical stimuli is necessary for those places that gradually develop into specific signal and reception stations. These organs make possible the *selection* of food substances, which is so necessary for life, with an initial seeking and avoidance before the substance comes into contact with the organism, this being *olfaction*; then with acceptance or rejection after the stimulus has arrived at the first zone of the alimentary tract—*taste*. Both forms are the result of a diffuse sensitivity to chemical influence. Even in man they have a particularly close relationship to each other (cf. p. 146), but there differentiation has proceeded to the point where taste, a purely contact sense, preserves its well-nigh exclusive reference to the receiving of edible and pleasant-tasting substances, while smell, acting at a distance, is less specific; aside from the reference to nutrition it has other relations; e.g., it mediates the recognition of objects, it tinges sexual feelings etc.

Mechanical processes operate in the environment of the organisms in both a macro- and micro-form. Under the first, objects in all physical conditions (solid, fluid, gaseous¹) come into direct contact with the surface of the organism; micro-mechanical processes consist of most rapid and minute vibrations that, propagated in appropriate media, affect the organism. To begin with, the living body is equipped to perceive these vibrations *diffusely*, (cf. "vibratory sensations" mentioned on p. 133). And in the course of development special organs are elaborated which respond to air vibrations of certain wave lengths with especial resonance, so that they are capable of vibrating sympathetically to the finest degree; thus the organs of hearing.

Other kinds of microvibrations affect the organism *chemically*; these are *radiations* (of light and heat). Here too at the beginning of the development there is a diffuse influence upon the organism by the stimulating sources of radiant energy, which may lead to internal

¹ Moving air (wind) can also be perceived through the contact senses.

chemical changes and certain movements in the total absence of consciousness. Plants display "heliotropisms," i.e., turning toward the sun; the "seeking of light" by animals is an extraordinarily widespread tendency from the lowest forms to the highest (which to laymen is most striking among insects). Light-seeking may also be negative in certain biosphere situations, in which case it appears as avoidance of light and seeking of darkness.

In man too there is the diffuse kind of effect of radiation together with the reflexes of seeking and avoidance. In so far as it becomes conscious it assumes much more the character of perception of self than of external perception. After a long rainy period we sense the reappearance of the sun as a general raising of feeling-tone; even a warm stove or irradiation by the artificial sun-lamp alters one's total condition.

The specific sense departments for radiant energy differentiate out of this diffuse effect; certain spots in the skin differ from neighboring regions in being especially good conductors of heat, and thus become delicately responsive points for receiving heat stimulation: the "warm spots." They make possible the identification of objects whose temperature deviates from that of their surroundings. Besides these, pigmented spots, accumulations of coloring matter, are concentrated in the surface of the organism, these being more readily affected photochemically by light than contiguous regions; from these extremely primitive beginnings there is a series of light-sensitive organs up to the elaborately developed retina of mammals.

II. OBJECTIFYING AND INTROCEPTIVE PERCEPTION

The previous biological considerations chiefly emphasized the origin of the special senses in the vital sphere common to them all.

We must now trace the development on another level, the specifically *human* level, where sensitivity evolves *away from* the immediate vital process and culminates in genuine *perception*.

We have already indicated the distinction between "lower" and "higher" senses. Vision and hearing alone belong to the second class, touch occupies a certain intermediate position, and all other modalities may be called "lower." For the higher senses the vital significance of sensitiveness is transcended by its *objective* reference. The exciting stimulus does not simply affect vital processes, but is the object of an objectifying experience. The object is set apart from the experiencing subject as existing in its own right. We are not concerned here with the epistemological aspect of this novelty, but rather with the psychological condition that brings it about.

The action of the lower senses takes place either in the total absence

of consciousness or else fuses with those experiences that concern the condition of the self, that is, with impulses and feelings. Thus for example olfactory impressions almost without exception have positive or negative feeling-tone; in them I experience rather the way in which the odor, beneficial or disturbing, reaches my vital sphere, than the manner in which the object, setting aside the "me," is constituted. To be sure, visual and auditory impressions also occur in various feeling-tones; colors, forms and their combinations, melodies and harmonies, human voices, please or displease me and are able to stir me deeply, but they *need* not do so. For the higher senses there is, between the poles of strong feeling-tone, a wide range of tonelessness (which does not necessarily signify a complete lack of feeling). To this intermediate region belongs the true *cognitive* process, and the gradual extension of this neutral sphere constitutes one of the most important facts of development—not only from animal to man, but also *in* man from childhood to maturity or from the crude to the cultivated person.

When I read a book or observe an object under the microscope, I am trying only to cognize; whether the visual experiences are beneficial or injurious to my vital sphere, whether they are pleasant or unpleasant to my feeling-sphere, is beside the point. If one is deeply engrossed in the "object" while reading, changes in the visual stimulation, e.g., the gradual onset of twilight, must attain a considerable degree in order, as disturbances of the vital sphere, to reach consciousness at all. The same is true of stimulation by speech sounds in the case of hearing. The main thing is to understand the meaning of the words, to master their objective content. The instant the listener gives himself up to the insinuating sound of his interlocutor's speech, that is, reacts vitally, the process of comprehending is jeopardized.

This disentangling of the objectifying process from the vital process is of course impoverishing, a depleting of the perception. Moreover, it is not the highest stage of development. That is reached only when the cognized object is perceived in its own essence. What I now experience of color and form, of tonal pattern and speech, is not merely *existent* as alien stuff, but is *expressive* and self-revealing. I observe and listen to it as it essentially *is*—because I perceive it not merely with my ears and eyes but grasp with *my* entire person, by visual or auditory means, *its* whole existence.

In such "physiognomical" perception¹ the purely objective salience of the visual or auditory phenomenon is terminated by a new embedding in the person. But it is not the embedding on the bare vital level which we described above, but *introceptive* embedding, the assimilation of the coincidentally perceived content of meaning

¹ This term is Heinz Werner's. For details see p. 161.

with the value of the perceived object. Here too feeling reactions occur, but they are different from the vital-affects mentioned above, *for they leave the object intact*. To this class belong especially aesthetic perceptions, the feeling-tone of which Kant designated as "disinterested" pleasure.

The object's remaining "intact" is in fact an essential characteristic of the higher senses. The lower senses do not acknowledge the object's aspiration toward an independent existence, for their tendency is to incorporate it. This is most evident in gustation, where the object must be destroyed in the course of perception. And odors are taken into the nose. Touch is a kind of "seizure"; it is a process of contact not only for the one touching but also for the thing touched, the surface and resistance (to pressure) of which is surrendered to the person perceiving. Yet the object is thereby only disturbed and not destroyed; this demonstrates once more the intermediate position of the sense of touch.

We must also relate the difference in *distance* and *scope* to the classification of higher and lower. Hearing and sight are the only specific senses that reveal distance to us systematically and comprehensively. Though hearing is confined to vibrations in the earth's atmosphere, the visual sense discloses the universe to us. But it is not merely the size and extent of the world that are disclosed by hearing and seeing at a distance, but also its *objectivity*. For that which is distant is not a decisive, motivating invasion of my life, but, in reference to me, indifferent and remote, and hence open to cooler consideration, to unimpassioned looking and listening.

The objective nature of the higher senses is also manifested in their *orderliness*. When in the next chapter we discuss the separate sense-modalities systematically, it will become clear that the lower senses do not go beyond the bare beginnings of order in their specific contents of experience. With sight and hearing, on the contrary, there are multi-dimensional arrangements having such distinct structure that it is possible to a considerable extent to *locate* the individual items of experience on a spatial diagram. Such orderliness is a prerequisite of objectification, for by means of it alone is it possible to achieve inter-individual agreement on perceptions and the super-individual establishment of their laws. Musical notation, which records the positions and durations of tones in a piece of music, makes it possible for the same musical perceptions to occur to any number of people at any time.

Finally, the category of Gestalt belongs primarily to the higher senses. With the lower senses the deep embedding in the vital sphere of the person signifies extensive Ungestalt in experience. Again the sense of touch occupies an intermediate position. It can apprehend

Gestalten of various kinds, but only in a rather crude and simple form, above all, in a non-hierarchical arrangement. On the other hand, sight and hearing experience an infinite variety of Gestalten; one has but to think of the number of word-Gestalten of a language that can be discriminated, and of the unlimited possibilities among artistic styles and productions, each of which portrays a Gestalt in itself. And hierarchy of Gestalt can be expressed only in visual and auditory impressions. A less extensive total structure is a member of a more inclusive one, and this of a still more inclusive Gestalt, etc.—and meanwhile the immediate concreteness of the perception is retained.

Examples of such hierarchical arrangements: as a total Gestalt a painting contains numerous representations of people as subordinate Gestalten, each of these, the part-whole of the face, and this the part-wholes of the eye, the nose, etc. Similarly for hearing there are: poem, stanza, verse, word; sonata, movement, theme, motif.

The chasm lying between higher and lower senses in this respect may be appreciated by trying to imagine an odor-sonata, a taste-painting, or a touch-poem!

Every production, whether artistic, scientific, technological, or anything else, is an hierarchical elaboration of Gestalten. That is why productions are usually accessible only to the eye or ear.

To summarize: Human sense perception serves as mediator between the two poles of immediate vitality on the one hand, cognitive and aesthetic experience on the other. According to its nearness to one or the other pole, the specific perceptual modality and the particular perception may be assigned a position on the scale. But each perception tends, although with different force, in both directions; there is none so bound to the vital sphere that it has no cognitive aspect, and none so coldly impersonal that it completely lacks a vital background. The highest form of development is represented by introceptive or physiognomical perception in which the specific sense impression, taken up by the total person, trenches upon the inner nature of its object.

CHAPTER VII

SYSTEMATIC VIEW OF SPECIFIC SENSE PHENOMENA

In the psychological analysis of the special sense modalities two undertakings are to be clearly distinguished. The older approach, which is closely related to psychophysics and physiology, has for its goal the classification of elementary mental phenomena that are usually designated as *sensations*; it then proceeds to relate the psychological system to the systems of physical stimuli and of physiological excitation. The other method is concerned with the phenomenology of the senses; it attempts to demonstrate and describe the *modes of appearance*¹ in the content of perception in their immediate uniqueness; it does not sacrifice the multiformity of these phenomenal modes prematurely to some hypothetical principle of organization.

I. THE MODALITIES OF THE “FIFTH” SENSE

We shall commence with those sense modalities which have taken the place of the “fifth” sense in the old scheme. Two of these modalities, temperature and touch, have always been recognized; to these have been added as “new” senses the modalities of kinaesthetic, vibratory, and equilibrium sensation.

The *temperature* sense provides the most illuminating example psychologically of a simple systematic arrangement. For all sensory experience belonging to it may evidently be located in a linear series; from the impression “hot” we proceed through “warm” and “tepid” to the thermally indifferent zone, thence through “cool” and “cold” to “icy.” The correspondence to a physical scale such as the thermometer is obvious. But here again we must avoid too close an approximation to physicalism. In our experience “hot” is not simply increased “warm,” nor “cool” decreased “cold,” but a phenomenon of a different *kind*. “Tepid” signifies a very specific phenomenon; not every intermediate state between “warm” and “indifferent” is perceived as “tepid,” but only such a state as involves moistness. (Water and humid air can be “tepid,” but not a stick of wood or a dry cloth.) At its extremes the psychological temperature scale

¹ *Erscheinungsweisen*.

departs definitely from the physical linear thermal scale; excessive heat and excessive cold are not the most widely separated experiences, but are quite close to each other; as a matter of fact they may be mistaken for each other. (See Fig. 5.)

Psychological description labors under a peculiar difficulty with the realm of *touch*. Sensory specificity is very poorly developed because this sense almost never operates by itself, but rather in combination with bodily movements that also have their own phenomenal aspect. The term "sense of touch" is misleading, for in touching several senses are always active (See p. 126). To characterize the sheer contact sensations it is therefore necessary to seek out phenomena that occur in the absence of bodily movement. It appears that in this modality we can find only three ingredients: contact, pressure, pull. Another classification includes three pairs of opposites: hard-soft, sharp-blunt, wet-dry; but these are surely not specific in the strictest sense, but belong to intersensory perception. For they contain spatial and temporal features which one cannot apprehend without moving.

The "new" sense modalities are not recognized at all directly by consciousness as separate modalities. Their existence has been known to science for only a relatively short time. This is a sign that the ability to experience them as specific senses must be extremely restricted. As a matter of fact these impressions are normally part and parcel of more complex structures, and their existence can be recognized only under unusual circumstances or by the device of experimentation.

Vibratory sensations. If one is in a factory where there are rapidly rotating or vibrating machines, the impression of the vibration is in general inseparable from the audible humming and whirring, and from the touch impressions received from the floor, the movement of air in the room, etc. But by directing the attention specifically one can acquire the experience of vibration as such, which penetrates from the surface to the interior of the body in an entirely different way from sound and contact.

The specificity of vibratory sensation was first discovered by David Katz, who also made experimental investigations of its laws.

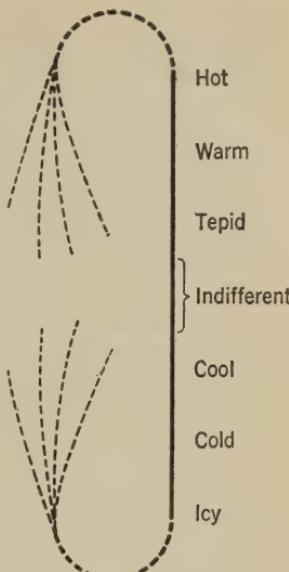


FIG. 5. THE PSYCHOLOGICAL TEMPERATURE SCALE

It turned out that the delicacy of vibratory sensitivity is of a much higher order than that of touch sensitivity. Moreover, as was mentioned earlier, touch is referred to immediate contact with the stimulus source while the vibratory sense is mediated both far and near. People who are deprived of both the true distance senses, sight and hearing, that is, deaf-blind people, are able to transcend the narrowness of touch chiefly through vibratory sensation. Even the tonal oscillations of music are not completely shut off from the deaf, thanks to the vibratory channel (cf. p. 162).

Kinaesthetic sensations excited by motor activities in individual parts of the body likewise never really occur in isolation, but are always fused with other aspects of perception. Indeed they represent a peculiar bond between inner and outer perception. For every movement that I execute changes the relations between me and the world, and since kinaesthetic sensations inform me of this *change*, the emphasis may fall now upon the *object* as moving against myself, now upon *myself* as moving against the world.

In the interests of *objectifying* knowledge kinaesthetic aspects of experience are classified according to the rôle they play in looking, listening, and touching (pp. 148 ff.). But in the carrying out of *acts* they come under *perception of self*; they inform the individual of the extent, direction, energy expenditure and total structure of his own activities, and subserve self-control and self-regulation. When I achieve empathic rapport with a perceived object, as by stretching my body on looking at a tall tree or Gothic cathedral, or as responding to the rhythm of dance music, it is the accompanying kinaesthetic sensations that contribute to the identification of *subject and object*.

It is most difficult to become aware of the *sensations of equilibrium*, which occur on excitation of the semicircular canals of the inner ear. Indeed it may be doubted whether in the normal orientation of the body they are ever contained in the total state of consciousness as *conscious items*. Nevertheless, sometimes nervous excitation in the semicircular canals appears to figure experientially, at least under abrupt disturbance of equilibrium, and likewise in sea- and air-sickness, vertigo, and while swinging.

II. TASTE AND SMELL

The conscious contents of both chemical senses are characterized by an immense number of qualities and by the lack of systematic arrangement. Every new food devised by our highly developed science of cookery, every successive vintage, and similarly, the fragrance of every species of plant and every artificial perfume, possesses its own quality in experience, which is incomparable with any other

and more or less refractory to psychological analysis. That is why there has never been anything more than piecemeal description of olfactory and gustatory qualities.

Belying this qualitative multiplicity, the search for elementary kinds of sensation for the sense of *taste* led to but four primitive forms: "sweet," "sour," "bitter," "salt" (a few investigators adding "metallic" and "alkaline" tastes). No classification or serial arrangement of these simple taste sensations is discoverable, with a single exception—experientially, "sweet" is in opposition to the other three qualities.

The impossibility of explaining the uniqueness of sensory phenomena by elementaristic psychology is especially striking for the sense of taste. The attempt to reduce, say, the taste experience caused by "cherries" or "bread" to definite percentages of "sour," "sweet," "bitter," and "salt" sensations would be ridiculous.

With *olfaction*, direct consciousness obviously has no basis whatever for differentiating primitive qualities out of the collection of phenomena; indeed, this is shown by the limitations of *language*. In German there is no way of designating olfactory quality specifically. For the terms "fragrance" and "stench" (*Duft* and *Gestank*) pertain to the *feeling* excited by olfactory impression, and not to the sensory quality as such. In other languages much the same process operates. In order to name odors we must borrow from other senses (cf. p. 158) or the objects to which they usually pertain (tar smell, rose perfume, etc.).

Hence it is incontrovertible that previously proposed systems for classifying odors were with one exception determined by non-psychological points of view (chemical, botanical, etc.). Hans Henning has essayed a purely psychological system. He distinguishes six primary olfactory qualities of experience, called "basic odors"; "spicy," "flowery," "fruity," "resinous," "burnt," "putrid";¹ and arranges them in an "odor prism." This constitutes the system of coördinates in which all odors that can be experienced are to be located. The usefulness of this plan requires further investigation; in any event it lacks the immediate authenticity of other psychological sensation classifications (see Fig. 6).

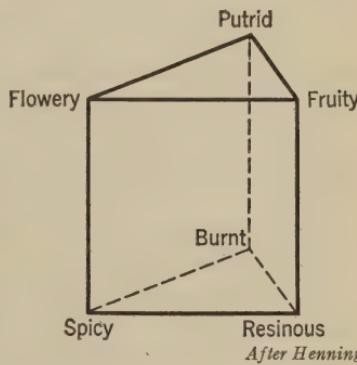


FIG. 6. THE PSYCHOLOGICAL
ODOR PRISM

¹ In German: *würzig, blumig, fruchtig, harzig, brenzlich, faulig*.

III. HEARING

I. NOISES

Two fundamental sorts of phenomena arise at once in the case of hearing: *noises* and *tones* (or "clangs"). The physical difference is simple; noises are produced by aperiodic, tones by periodic, air vibrations. But even the person who has no suspicion of this physical distinction has immediate experience of a qualitative difference between those auditory impressions that we call knocking, thundering, rattling, crackling, jingling, grating, lowing, etc., and the instrumental tones of the violin and pipe, the vocal notes of human singing and the singing of birds.

Perceptions of noise play a tremendous part in human life. All human activities and all technological processes are characterized by specific noises, and considered purely acoustically, spoken language is chiefly a succession of noises. In curious contradiction, psychology has shown scant interest in noises. There is still no true phenomenology of noises; the only attempt has been to reduce them to the elements of the other auditory phenomena. For instance, an aperiodic resultant can be attained *physically* by the simultaneous presentation of many periodic sound stimuli, and this is experienced as "noise." (A simple example is the simultaneous striking of many piano keys by pressing them down with the arms.) Helmholtz drew the conclusion from this that noise perception is but a confused complex of many single tone sensations; the tones thus seemed to be preserved as simple primary qualities of the sense of hearing.

It is certain that many noises also include tonal features (sometimes imitated in program music); indeed, a regular scale can be produced by arranging noises serially (e.g., by knocking on pieces of wood). The noise quality, as a phenomenon of perception, nevertheless is and remains somewhat different from the induced tones. This is also true of speech in spite of the so-called *melodies* contained in it; representation of these gliding tonal variations by musical notes does violence to them, and in terms of experience they have a very different nature from sung melodies.

Wundt designates noises of the kind just mentioned as clang-noises. He adds to the class two other species of noise: intermittent sustained noises (rattling, hissing, rolling etc.) and momentary noises (sharp cracks and shocks). Beyond this the systematic psychological arrangement of noises has not progressed as yet.

2. TONES AND CLANGS

Why has psychological theory favored *tones* among auditory phenomena? Doubtless to a great extent because as contrasted with

the chaos of noises, they lend themselves directly to an ideal *system of arrangement*. The impressive systematic structure of music is here involved as well as the physical arrangement of vibrations, whose frequencies¹ may be determined and graded exactly, in the quest for an equally simple systematic theory of the corresponding mental "elements" that could be expressed quantitatively and in unambiguous degrees. This unquestionably fruitful conception was first made the basis of the psychology of tones by Helmholtz and was further developed, refined and partly changed by Stumpf. Helmholtz's theory may be reduced to the following principles:

a. The sole mental constituents of all auditory perceptions are *simple tones*. These are tones whose *physical* source yields simple sinusoid waves, and in which *psychologically* the closest analytical attention can detect no partial tones.

b. Simple tones (regardless of their intensity) make up a fixed and definite *linear order* in which progression from one tone to another is possible in *one way only*, through the intermediate tones; the series is the scale of *pitches*, which corresponds to the variation of the physical wave frequencies. By this correspondence every tone has a fixed place on the scale. Since the tonal series is *continuous*, the discrete pitches with which music is concerned represent but a selected fraction of the endless number of pitches that enter into perceptions.

c. All other qualities of auditory experience must therefore be explained by the combination and relationships of simple tones and their pitches.

The working out of principle *c* in connection with various problems was Helmholtz' true accomplishment. He had of course noticed that there are other tonal phenomena besides pitch, but he sought less to describe them phenomenologically than to equate them to the hypothetical elements of sensation. His application of this principle to noises has already been mentioned. The same attempt was made in regard to vowels. But the most important application was to musical clangs and their specific qualities, the *timbres*.

A "clang" is the tonal impression made by a single stimulus, which as such strikes the unprejudiced listener as unitary. According to Helmholtz such unity is illusory. The clangs of nearly all musical instruments,² like human singing, are compound. This means that *physically* the sound waves are analyzable into a number of different frequencies that are simple multiples of one another. (If the primary frequency is made equal to 1, the other frequencies can be expressed by the numbers 2, 3, 4, etc.) *Psychologically*, the tone sensations

¹ "Frequency" is the number of successive periodic compressions and expansions per second of the air which carries the sound.

² Only tuning forks and blown bottles yield relatively simple tones.

which correspond to the various frequencies are contained in the clang as experienced; for they may be heard singly by specially directing attention or with the aid of resonators (i.e., hollow boxes tuned to a partial tone). The tone of lowest frequency within a single clang is called the *fundamental tone*, the others, "overtones." Since for physical reasons the overtones and their intensities differ for each musical instrument, the total effect of the combination of fundamental and overtones always varies; hence even for the same fundamental tone the different musical instruments have different *timbre*.

Helmholtz also applied this theory to intervals; those intervals are consonant which possess identical overtones. Those intervals whose overtones interfere with one another, producing beats and harshness, are dissonant, and are more like aperiodic sound.

This theory is one of the most brilliant attempts to explain a rich area of experience by the help of a psychological elementarism. But it tended in part to explain qualities *away*. This was the occasion for the *phenomenological* counter-movement which Carl Stumpf initiated.

Though Stumpf was under Helmholtz' influence, he disagreed in one respect. At the sound of a clang or clang combination we hear, not a simple juxtaposition of the fundamental tone and its overtones, but a more or less differentiated unity. The simple tones do not constitute the clang as an addition of mental atoms, but *fuse* with one another. In extreme cases the fusion may even become absolute; the two simple tones that together constitute an octave are heard by most people unqualifiedly as *one* clang, when sounded simultaneously. The intervals in order of decreasing consonance, from the octave through the fifth, the fourth, etc., to the seventh, Stumpf treated as compound clangs with decreasing degrees of "fusion."

To be sure, even the concept of fusion retains the assumption that the result of fusion is a secondary product; here too only simple tones, as constituent qualities, and pitch, as their sole essential feature, are considered primary. The modern psychology of tones dispenses with these assumptions. There are now three previously overlooked tonal phenomena that receive due psychological attention.

a. The older psychologists, especially Stumpf, of course pointed out that the tones of the scale possess not merely that pure graduation of pitch which we describe by the terms "higher" and "lower," but that this is accompanied by two other qualitative variables; *brightness* and *volume*. The precise signification of "dull" and "bright" tones, "thin" and "full" ("round," "space filling") tones, defeats description; yet every listener comprehends it and finds the discriminations in his experience perfectly evident. Formerly these features were viewed merely as epiphenomena to accompanying pitch; their independent

significance is now being recognized more and more, for the distinctions of tonal brightness and dullness, like alterations of volume, appear independently of variations in pitch. Furthermore, the same qualities are experienced with noises, and consequently pertain to all audition, not merely to musical tones.

b. The purely linear representation of the tonal scheme suggests that the tones themselves become further apart in experience for increasing intervals on the scale. This is erroneous, for the *octave* does not fit the system. Proceeding from any initial tone in the series, progress is not constantly further from the starting-point; with the completed octave is reached a point that is, to be sure, not identical, but very similar; so much so that its two tones can be confused.

G. Révész has demonstrated that the special nature of the octave also holds for *simple tones*; therefore the derivation of the relationship of octaves from common overtones (Helmholtz, Stumpf) is untenable. It is rather a question of a primal characteristic of tones. Révész proposes the following theory: According to him, simple tones have *two* basic attributes; pitch and "tonal quality." In regard to this "quality" all tones having the same positions in the octaves are identical; their failure to achieve full identity is an effect of difference in pitch.

c. That *vowels* in human speech are somehow to be coördinated with tones was long ago set forth as a postulate. Helmholtz, L. Hermann, and others tried to produce vowel-clangs by combining simple tones; it was disputed whether tones having fixed wave lengths (called "formants") could have a standard function. This problem was advanced by Köhler's demonstration that even *simple* tones have vowel quality. After a little practice his experimental subjects were able to hear in certain tones a definite *Oo*-sound (as in boom), in others (as the pitch increased) an *O*-sound (as in cold), an *A*-sound (as in father), another *A*-sound (as in able), an *E*-sound (as in ether).¹ The intermediate tones had the character of diphthongs.

Köhler also found that the pure vowels attach to fairly narrow regions of the tonal series, which were nearly identical for all his subjects (independently of dialect). Remarkably enough, these characteristic vowel regions are an octave apart, and occur at about C on the musical scale.

Intervals of an octave, going either lower or higher than the vowel series, continue to produce certain half-vowels; below the *Oo* sound the tones take on an *M* sound; above the *E* sound, first an *SS* sound and then an *F* sound.

If the evidence of Révész and Köhler is combined, in each case

¹ In German these five sounds form the series of simple vowels designated as U, O, A, E, I.

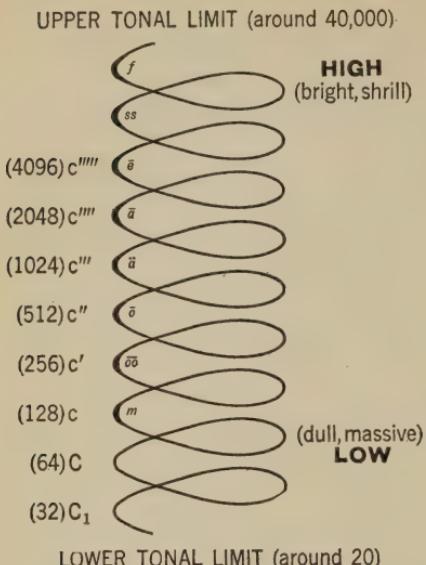


FIG. 7. THE PSYCHOLOGICAL PITCH SPIRAL

in music (for Révész, the tones having identical "quality"). The regions of the spiral that (according to Köhler) are characterized as vowel equivalents are indicated by the heavy line; within it the vowel sound (or semi-vocal sound) belonging there is inserted. To the left are the musical signs of the octaves, with their physical wave frequencies in parentheses.

IV. VISION

The investigations of vision exhibit clearly the development of psychology from an analytical elementaristic theory into a phenomenological approach.

I. THE COLOR SYSTEM

The task of classical psychophysiological optics, of which Helmholtz was the chief founder,² was conceived to be that of demonstrating elementary visual "sensations," and of explaining all optical phenomena by their association.

"Color sensations" have been commonly used (at least in German) to express the simple basic elements of any visual perception, including

¹ The spiral symbol for the tonal series goes back to Drobisch.

² Wundt's work was of great importance, as were some of E. Hering's contributions. The period was rounded out by G. E. Müller.

division into octaves results as the essential characteristic of the tonal series (including simple tones). While Révész emphasizes the *similarity* of tones in different octaves, Köhler stresses the qualitative *differentiation by octaves* of the tonal series; for according to him each octave has a different vowel equivalence.

The spiral diagram¹ is intended to bring out all known attributes of tones. The spiral (which is to be thought of as tridimensional) constantly ascends, corresponding to the steady ascent of *pitch*. Each loop covers an *octave*, so that any vertical tangent strikes the tones having the same letter

"black," "gray" and "white." In English, however, it is convenient to call these achromatic impressions simply *light sensations*, distinguished from "true" colors.

Uncolored light forms a natural linear series ranging from jet black through dark, medium, and light gray to pure white. The colors, on the other hand, are arranged in a closed curve (here indicated as a circle, Fig. 8). If we trace the known colors of the *physical* spectrum as they are made up in experience; red, orange, yellow, green, blue, violet; a point between green and blue-green (cyan) is at the greatest distance psychologically from the starting point, red, and from then on the distance again decreases. Between spectral violet and spectral red there is a blank which is filled in with the color purple (a color that does not exist in the spectrum).

If the two systems are combined there results the "color solid" in which the black-white series forms the vertical axis and the color circle a kind of equator. In such a tridimensional system every elementary quality that can be experienced has its definite location. Along the equator are ranged the hues and their various shades in their fullest purity, and also along each parallel ("latitude"), but here in varying *brilliance* accordingly as it lies nearer the black or the white "pole." In the interior are the shades that from all angles approach the center of the sphere—neutral gray—and thus have less and less *saturation*.

There are many advantages to such a color system. In the first place it permits study of the relations that obtain between the mental "elements," the physical stimuli, and also the physiological effects. Secondly it facilitates the location of every imaginable shade of color, so that each can be designated for purposes of scientific and social communication. But here again lurks the danger of sacrificing unprejudiced observation and appreciation of visual complexity to analysis into elements and simple physical and physiological correspondences. Only items having a place in the tridimensional system were accepted as immediate sensory experience; as "sensations." Consequently all unlike phenomena had to be thrust outside of the precincts of sensation and assigned to some other sphere, such as thought, imagination, or judgment.

Thus Fechner distinguished between a "direct" and an "associative" factor in visual aesthetic perception; Helmholtz developed a theory of "unconscious inferences" to explain phenomena like contrast, trans-

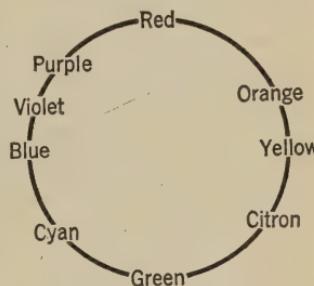


FIG. 8. THE PSYCHOLOGICAL COLOR CIRCLE

lucence, and color constancy. With respect to causality this sensationalistic dualism led to accepting only elementary sensations as "inborn," and to ascribing all other perceptual functions to "acquisition." That is why Helmholtz was to a great extent an "empiricist."

It was otherwise with Ewald Hering. As a physiologist he was likewise constrained to explain the neural processes in vision. But he was convinced that such explanations may be attempted only after taking into account inner phenomenal experience. When introspection revealed immediate sensory modes of experience, they could not be regarded as acquisitions; they seemed rather to be "inborn." Hering consequently represented "nativism."

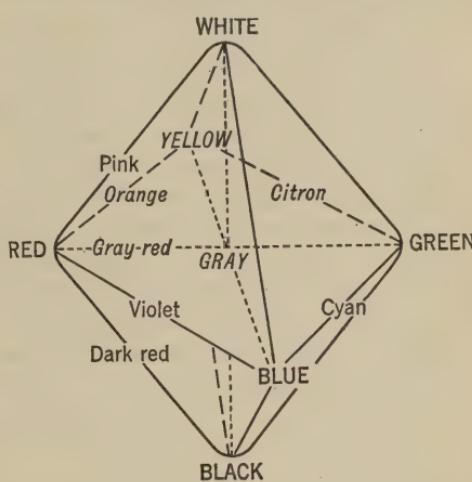
Hering's most important *phenomenological* conclusion was that the closed curve of the colors should be represented not in circular but in rectangular form. In actual experience every hue is not of the same order as any other, and not all transitional shades are smoothly continuous (as symbolized by a circle); on the contrary there are in the color series outstanding points like corners, at which the phenomenal direction changes abruptly. At these corners are the four *primary colors*, ("Hauptfarben") red, yellow, green, and blue, which are altogether immediate and unique phenomena as compared with the intermediate shades. Orange, for example, when compared with the simple red and yellow that it contains, has a definitely blending character, as has violet in comparison with primary blue and primary red. Hering took a similar view of achromatic light; only black and white yielded primary sensations, while all shades of gray were blends.

This establishing of six phenomenally primary colors is acceptable with two qualifications. The six color system is successful for contemporary Western culture, but its validity for all periods and cultures is extremely questionable. The experience of color is so closely associated with other experiences and is so firmly connected with the environment and with symbolism, that the experiential distinction between "primary" and "secondary" colors can be influenced. For the same reasons it is hazardous to translate these directly into physiology of the retina, thereby making them hold for all people in all times.¹ Moreover the designation "blend" (better *transition*) must not be interchanged with "mixture." In physics and in painting orange may be produced materially by mixing red and yellow, but psychologically we do not experience in orange a mixture of red and yellow; the impression is integral, although there are similarities so that it may properly be described as lying "between" red and yellow.

¹ According to Hering there are in every retinal element three substances, each of which can elicit a pair of sensations by a reversible chemical reaction (dissimilation and assimilation). One substance yields the sensations white and black, another the sensations red and green, and the third the sensations yellow and blue. All other color sensations result from the simultaneous activity of more than one of these substances.

Through Hering's modification the color solid took on the form of an octahedron (Fig. 9). The six corners represent the primary colors black, white; green, red; blue, yellow. All other portions of the solid are filled in with blends of different hue, brightness, and saturation.

The colors at opposite corners are related to each other as *contrasting* and as *complementary*. If two such colors are presented simultaneously or successively their opposition is immediately evident and the peculiar nature of each is intensified. In conjunction with any color a shade of gray becomes tinged with the contrasting color. *Complementary* means that if both colors stimulate the same spot of the sense organ at once they inhibit each other; by properly *mixing* the two components a neutral gray results.



After Ebbinghaus

FIG. 9. THE PSYCHOLOGICAL COLOR-OCTAHEDRON

2. MODES OF COLOR APPEARANCE

Hering represents the link between the older, physiologically oriented, and the new *phenomenologically* directed psychology of sense perception. Since his time it is the *psychologists*¹ who attempt to describe the inner variety of color-experience as such and to establish its laws. The "modes of appearance" (Katz) is now becoming the problem. Within the actual range of human consciousness there are never red, green, gray, etc. color elements that add up to visual constructions, but there are colored objects under definite illumination. Color exists only in certain spatial structures from which it cannot be abstracted without relinquishing its phenomenal nature. According to Katz, hue, brightness, and saturation, which the older theories had claimed to be true attributes of "sensations," constitute merely the "coloring matter" of the various mental phenomena. Following Katz it has become customary to distinguish "film color" (e.g., the spectral colors in a color mixer), "surface color" (the color attaching to the outside of objects), "transparent color" (e.g., of colored glass), "bulky" or "space-filling" colors (of liquids in vessels, of gases, etc.). The characteristics of these modes of appearance are immanent

¹ Above all Katz, and also Gelb, K. Bühler and others.

qualities of the perception as such, not items completed associatively or logically. The same is true of the modes of appearance of gleaming, glowing, shining, reflection.

The modes of color appearance mentioned thus far are properties of single objects and forms; beside these there is a visual mode of appearance depending on lack of patterning and on diffuseness. The *illumination* under which a room appears in daylight or that of a landscape before a storm is utterly different from a summation of the hues and light intensities of individual visible objects. Illumination penetrates space and suffuses all individual items. Viewed psychologically it is much more deeply embedded in our experience than objects are; it forms a part of our self-awareness. Katz designates this peculiarity of the visual impression "insistence."¹

The individual may give himself up so completely to the space-filling light that particular objects fade out of experience. On the other hand he may disregard, by a mental attitude toward the particular object, the illumination in which it is fixed. This raises a final problem in the psychology of color, the significance of which was noticed by Hering but which was first investigated in a detailed way by modern psychology; it is the problem of *constancy of light and colors*.²

One and the same colored object, e.g., a green leaf, reflects different types of rays upon the human retina, accordingly as it is viewed in direct sunlight, in twilight, or under artificial lighting by an arc light or gas mantle. Now if there were exact correspondence between stimulus and perception, the object would have to appear in quite different coloration at different times. But in reality the leaf not only remains the same object to the observer but also appears constant in its coloring—as long as the conditions of illumination do not become wholly abnormal.

The following instance is even more paradoxical. If a white and a black surface are so arranged that the white surface is in the shadow of a screen and the black exposed in broad daylight, any observer who looks at both at once sees them as white and black despite the varied illumination, although the white appears less "intrusive" than otherwise. Thus white remains white for visual perception although the amount of physical light energy reflected by the shaded white surface is less than that proceeding from the brightly illuminated black surface. But the situation changes immediately when the *sources* of illumination are made invisible to the observer. Thus if a perforated screen is set up in front of the two differently illuminated surfaces so that on looking through two apertures the observer sees nothing but portions of each surface without any surrounding field, he sees two kinds of gray, that proceeding

¹ *Eindringlichkeit*.

² A. Gelb presented a summary of the problem.

from the "white" surface appearing darker than the other. It is only in a state where the source and nature of the illumination are unknown that the light intensities are seen as corresponding to their physical intensities. In other cases phenomenal constancy of brilliance or of color holds to a considerable degree.

The phenomenon of constancy furnishes one of the most impressive illustrations of personal anchorage of perception.¹ The individual can exist only in a world in which objects are constant. Perception brings him objects in their actual condition, and does not surrender them to momentary fluctuations (so that in the next instant under different illumination they are no longer the same). On the contrary, it preserves the necessary constancy. Visual perception is adjusted not merely to the momentary stimulation of specific portions of the retina by specific physical stimuli, but also to the total person-object relationship at a given moment.

¹ Cf. p. 153 for analogous phenomena of constancy.

CHAPTER VIII

THE INTERRELATIONS OF THE SENSES

I. INTERSENSORY PERCEPTION. SPACE AND TIME

I. GENERAL REMARKS

To the extent that different sense modalities participate in a single perceptual experience, we call the perception "intersensory." Because the emphasis in psychology fell for a lengthy period on specific sense phenomena, there has been insufficient appreciation of the great, well-nigh unlimited, importance of intersensory perception. In reality, most human perceptual experience is by far a more or less intimate fusion of several sense modalities, though one modality ordinarily predominates. The most important evidence of this will be given forthwith in perceptions of space and time; first we present three other examples by way of preliminary demonstration.

The perceptual experience upon the epidermis that we denote by "wet" occurs only when an extended and diffuse *touch impression* also involves the *temperature* "cool." When I first put my hands into it, warm water is not sensed as wet; it is only when I withdraw them and cool them off rapidly in the air, that I become aware that they are "wet."

The extent to which olfactory sensations are involved in our *taste* perceptions is first noticed when a heavy cold removes the former factor; foods that are ordinarily very tasty then lose their taste. Still other senses operate in gustation. Thus the astringent or burning taste of certain seasonings depends upon sensations of touch or heat. Crisp dainties (radishes, crackers) lose their individual flavors on becoming soft, because of the cessation of sensations of resistance and movement that are induced by biting.

The *quantitative* estimation of objective things and processes is also due more frequently to coöperation of sense modalities than to a single sense. The housewife filling the tea-kettle with as much water as is usually needed for breakfast can tell by her "feeling" when to turn off the tap. In this "feeling of appropriateness" are embedded: kinaesthetic impressions of the increasing weight of the kettle in her hand, auditory sensations of the changing resonance of the water running into the kettle, visual impressions of the level of the water, and finally a temporal awareness, not to be ascribed to a

specific sense, of the duration of the process. But this is not a rigid combination with a fixed share of each component; on the contrary the process of estimation is highly elastic. In conformity with the specific situation one or another of the components may fall out or become dominant without greatly impairing the exactness of the result. And the housewife is mostly not aware of the changed proportions of sense impressions in her resultant estimation.¹

In these examples we have discussed perception *analytically*, and have consequently chosen the term "sensation" for the contributions of the various modalities to the whole perception. This calls all the more for stressing the fact that one does not interpret such depictions elementaristically. On the level of pure experience the intersensory perception *wet* or *crisp* is quite as unitary as is the sensorially specific perception *red* or *violin tone*. In the impression *wet* there is no hint of any conscious "summation" or "association" or "synthesis" of impressions of contact and heat; the very instant I attempt to make these two components conscious I lose the true quality *wet* from my experience.

There are, then, intersensory perceptual phenomena that are quite as primary as separate sensory modes of appearance.

Perhaps the primordial character of the former phenomena is even more marked. Let us recall the *genetic* principles of the sixth chapter, in which it was shown that special sense organs and forms of specific sensory experience develop gradually out of a diffuse, undifferentiated sensitivity. Since this diffuse matrix does not simply vanish in the higher stages of development, we are justified in regarding intersensory perceptual phenomena, in so far as they are not acquired during the individual's life, as persisting forms of the pre-specific sensitivity.

The relation of specific to intersensory perceptual phenomena is thus revealed as having two sides. On the one side intersensory perceptions are the more primal, and prior to the differentiation of special sense perceptions; on the other, diversified specific perceptions can, in the course of individual learning, combine to form new intersensory perceptions.

While elementaristic psychology attempted to explain intersensory perceptions by "association" of the various specific sensations, personalistic principles impose a "dissociation," which is contrariwise the means of separating the special sensory components out of the non-specific total perception that is deeply embedded in the person. *Then only* may the liberated products of this dissociation, that is to say, specific items of experience, be united to form new intersensory perceptions. The example of the tea-kettle falls in this second category.

¹ The problem of "intersensory estimation" deserves the special attention of experimental psychologists.

2. SPACE PERCEPTION

a. *Its intersensory nature.* Considering the basic attributes of space as extension, form, size, direction, locality, distance, movement, it turns out that none of them is accessible to consciousness by the means of a single sense modality. In experience, the table that I see before me, the chair on which I am sitting (and which I sense only through contact), and the music that catches my ear, all have *extensity*. I can determine the different *distances* from me of two books lying on the table both by the eye and through groping movements, that is, kinaesthetically. The round *shape* of a ball may be mediated to me through sight, touch, or both. I can see and hear the *direction* from which a vehicle approaches.

The attributes of space as contents of perception are thus *intersensory* by their very nature. This is true even in concrete instances when only *one* sense modality is operating. The sphericity of the ball even when I am not handling it but perceive it by vision alone, is not specifically visual in the same sense as the color of the ball. For the latter disappears on passing to another sense modality, but the spatial form persists.

It goes without saying that despite these observations all investigations that are concerned with the rôle of specific senses in space perception retain their importance, but their theoretical interpretation must be changed in part. This is exemplified by the two chief modes of space perception, vision and touch.

b. *Space perception through the eye.* This class of spatial phenomena has received especial attention from modern psychology; the eye, in fact, excels all other senses in perceiving both the range of qualities and the minutiae of space. The perception of plane surfaces, Gestalten, including the wide realm of pictures and print, is a monopoly of the eye alone, as is likewise the perception of remote objects. But with those spatial phenomena which may be experienced by other means than vision, (e.g., touchable objects) the eye's capacity of discrimination is usually superior to that of other sense organs.

Visual acuity is measured by the smallest difference in spatial arrangement that can be noticed by the immobile eye. This has been investigated for points, lines, angles, Gestalten, movements, at different points on the retina and under varied conditions of illumination. At the central portion of the retina acuity is of astonishing delicacy; under favorable circumstances a distance of one minute of arc between two points suffices for them to be seen as separate. Toward the periphery of the retina visual acuity swiftly diminishes.

Even *within* perception by the eye, the intersensory nature of perceived space is in evidence. For the eye is not exclusively an optical

instrument but also an *organ of movement* and a complicated one; all eye movements lead to kinaesthetic impressions that enter into the experience of space-vision.

In the single eyeball there is regulation of the thickness of the lens to promote the clear projection upon the retina of objects at greatly varying distances (accommodation), and the functioning of the ring muscle that dilates or contracts the pupil. From without six muscles are attached to each eyeball to allow it various turning and rolling movements. The movements of the two eyeballs are so closely coördinated that *one double organ* is frequently spoken of. The lines of regard of the two eyes normally intersect at the fixated object (convergence). This angle of convergence is the more acute the further away the object is from the observer. Moreover the eyes may be turned up and down, right and left, in concert.

These muscular activities are ever-present in seeing. Even when we fixate anything with the eye *at rest*, the eye muscles must be kept at a certain tension in order to hold the proper convergence and to avoid double vision; that this condition does not fail to register mentally is indicated by the tiredness that is felt in the eye muscles after continued fixation. But as soon as the eyes are set in motion; in all true "looking," in following with the eye, in tracing contours, in reading, in shifting convergence from far to near and vice versa, pure visual and pure kinaesthetic moments become so intimately fused in the experience of space, that their separation is but an artificial and unnatural procedure.

We must restrict ourselves to a single phenomenal mode of visual space, *perception of depth*, but we emphasize the fact that similar considerations have application for other phenomena.

In what manner and by what means does the individual see depth, i.e., distance from himself, one thing behind another, tridimensional contours? This problem is arresting because there seems to be a contradiction between the visual accomplishment and the spatial make-up of the receptor organ; for the retina is a surface, and the impressions upon it, being received side by side, form nothing but "plane" images. What is the source of the visual experience of depth?

Searching analysis has yielded a large variety of activities of the retina and eye muscles, all of which contribute to the seeing of depth. They are chiefly the following.

(1) *Purely visual.* (a) Retinal disparity; because of the dimension of depth in the objective field of vision the retinal images for the two eyes are not entirely alike. (The stereoscope isolates this factor and brings about artificial depth vision).

- (b) Foreshortening of perspective (e.g., of the corners and edges of the table in front of me).
 - (c) Reduction in size of the retinal image as distance increases.
 - (d) Overlapping, by which more distant objects are partly covered up by nearer ones.
 - (e) Aerial perspective, visible objects appearing more hazy the further away they are from the observer.
- (2) *Kinaesthetic.* (a) Sensations accompanying the change of accommodation of the lenses for objects at varied distances.
- (b) Sensations accompanying changing binocular convergence for objects at varied distances. (An attempt to fixate a finger held close to the nose will give an immediate muscle sensation of the unusually strong convergence response).

All these factors may be investigated separately by experimental means; natural conditions, e.g., paralysis of eye muscles, loss of one eye, afford instructive evidence of the effect of one factor or another. Such investigations are of especial importance from the point of view of psychology of performance; thus it has been determined that the movements of convergence in binocular vision are adjusted to finer differences of depth than is accommodation.

But there is no phenomenal hint of the manifoldness of these factors. The *phenomenon* of depth is for the impartial observer altogether original and unitary; it is an instance of primary intersensory perception.

On the other hand, our description of visual depth was incomplete. For analysis of the perception is not exhausted by visual and kinaesthetic impressions that originate in the eye. *Other parts of the body* are also involved in it, and to the greatest extent in the more primitive stages of development. In infants perceptible depth is restricted to very narrow and nearby regions, with the visual impressions leading instinctively to grasping impulses; consequently kinaesthetic grasping experiences in arms and hands are necessary components of the total impression "within" or "beyond reach"; this is the most primitive awareness of nearness or distance. When the individual is able later on to convey himself to distant objects, the consciousness of his own locomotion likewise becomes an index of distance; in short, the individual "sees" depth not only with the retina nor solely by means of eye movements, but *by means of his whole person*. Those organs are thrown into play at any given time which are most appropriate to bring about the perception. And we call the entire process "seeing" because the impulse to this total response is initiated by the eye, and because visual impressions give their stamp to the total perception;—but not because it is a matter of some exclusive, specific sensory function of the retina and the eye muscles.

By following the development of visual depth in the individual it is clearly shown how specific sensory factors become independent through dissociation from the original intersensory perception (so that the purely visual factors of foreshortening and retinal disparity are able by themselves to give rise to the impression of depth), and how new intersensory patterns are formed in the more advanced stages. It was long debated whether visual depth was to be explained nativistically or empirically; our interpretation shows that both original and acquired factors are involved in it.

c. Tactual space perception. After the eye, the hand is the principal organ for mediating space perception. What, then, is the nature of this tactual experience? It was previously pointed out that what is called the "sense of touch" denotes no one specific sense modality, but includes contact and movement (*haptic* and *kinaesthetic* factors) as inseparables. Of course the contact of the surface of the hand when at rest upon an object arouses cutaneous sensations; but the object under this "passive touch" occasions an extremely inadequate spatial perception; we get a vague notion of its extensity with no sort of clearness about its shape and proportions. (When laid on the passive hand, a five-cornered card cannot be distinguished from a six-cornered one). *Active* touch must intervene in order to convey any impression of spatial pattern. This takes place in two ways.

In *grasping*, the object is enclosed by the organ of touch; the pressure sensations set up simultaneously at many points on the hand combine with postural and tension sensations in muscles and joints to produce a singular intersensory perception of the object. One may touch by grasping with a single hand, as in picking out a key or a match box in the dark. It may be done with both hands; in grasping a large ball the two hands form a single organ in the same sense as do the two eyes, mentioned above. Our experience is not that of a right and a left shell with a gap between, but of the whole ball all at once. Other organs may be used in grasping; the blind man extends his arms around a cabinet in order to perceive its size.

In *tactual following* one and the same part of the body is run successively over the outlines or surfaces of the object that is being perceived. Thus the true quality of the content of perception must be produced by the changing sensations of resistance and movement in joints and muscles. We follow with the hand the outlines of a table in the dark, or an unlighted stairway with the feet or with a stick.

The last illustration is very instructive. The sensations of contact and pressure that the stick produces in my hand are very sparse and monotonous; I nevertheless have a good perception of the stair steps through the participation of kinaesthetic sensations while manipulating

the stick. It must, however, be emphasized again that our perception of the stairs does not consist of a mosaic of pressure sensations in the feet and hands, kinaesthetic sensations in the musculature of the legs, arms and hands, but of a unitary experience of the object "stairs."

d. Perceptual space. The discussion to follow will carry us much nearer to the understanding of space perception.

We never perceive isolated spatialized objects or spatial attributes (shape, extensity, direction) in themselves, but solely *patterns in space*. And this space, which belongs to my perception as the common carrier of individual spatial data, is moreover an *intersensory* phenomenon. It is misleading to speak of "visual space," "tactual space," or "auditory space." There are no special spaces of the special sense modalities, but only *personal* space, in which every individual lives, and parts of which he experiences. When I perceive the locality and the volume of a musical clang, it is of course an experience of space of a predominantly auditory nature, but the space *in* which these impressions exist for my experience is not some special sound-space, but *my* space, the same space that is the common ground of my visual and tactual experience of space.

No more is there purely visual space. It might be objected to this statement that spatial impressions of distance, e.g., of the distant hills or the sky, can be experienced by the eye alone and consequently form in their totality a "space" of a peculiar kind which is wholly lacking to the blind. But this argument is not conclusive. There is certainly a very essential difference between nearness to and distance from the person, but in terms of perception there is no gap between them; it is a moving continuity. From the purple hills beyond, to the house in front of me that I can reach in a few steps, and to the tree next to me, the twigs of which I am grasping, the landscape comprises *one* space with myself as the center.

And the space of the blind? Their knowledge of spatial patterns is evidently referable primarily to the sense of touch; yet their space is no mere tactual space; it is the same space as that of those who can see, but sparser in content and narrower in possibilities of action. For the blind too, space extends continuously from near to far; from it voices and thunder, the telephone, the wind, the warm rays of the sun, the vibrations of distant cars bring information with the aid of various sense modalities.

We must therefore conclusively break off all attempts to ascribe to a single sense a monopoly of spatial experience. Such attempts have led to highly fanciful fabrications, and have done more or less violence to true mental experience.

Thus it has frequently been maintained that the sense of sight alone purveys spatial impressions while the other sense modalities

must be interpreted *indirectly* as giving cues to spatiality. This view even went so far as to deny any true spatial experience to the blind. In opposition to such exaggeration it is scarcely necessary to point out that there have been and are among those born blind, prominent scientists (geometers) and artists (sculptors) whose work is spatial; *every* blind person proves by his every day behavior, actions, and sayings, that space exists for him in a thoroughly palpable form.

Another theory grants an immediate spatial character to kin-aesthetic sensation alone, and explains quasi-spatial perception by the other senses solely through its associative relations with kin-aesthetic sensations.

The most renowned example of this is Lotze's "local sign" theory of visual space perception. When a visual stimulus strikes any portion of the retina it arouses an impulse to move the eye until the stimulating ray of light falls upon the center of the retina, the spot of clearest vision. This tendency to movement is different for every point of the retina; in consequence there arise specific associations between the visual sensations from definite points and definite kinaesthetic sensations. Thus in the perception of all individuals kinaesthetic sensations become signs of the localities in space from which the stimuli proceed.

e. *Spatial constancy of objects.* The psychological theory of space here presented finally clears up a phenomenon that remains inexplicable as long as space perception is regarded as the property of specific senses. It is the *spatial constancy of seen objects*. This occurs in two forms: as constancy of size and as constancy of shape.

(1) *Constancy of size.* Two objects of the same size but at different distances from the eye throw upon the retina images of different extent. For example, if one tree is twenty feet away from me and another forty, the image of the first occupies four times as much space on the retina as the image of the second. Normally I do not "see" this enormous difference in size. Ask a lecturer if he "sees" the auditors in the second row smaller than those in the first; he will say no. If a person approaches me, the size of my retinal image constantly increases; nevertheless his size appears to me to remain constant. These phenomena hold over a very considerable range of distances; it is only at unusually close and unusually far distances that the experience of marked largeness or smallness impresses itself. (From a high tower or mountain the people, houses, and vehicles far below appear to one to belong to a Liliputian world).

(2) *Constancy of shape.* On unprejudiced observation I see the table at which I am sitting and the books lying on it in their "right" form, that is, as rectangles; and the plate as a circle. But the retinal images of these objects, if I do not look at them along an exact perpendicular from above, are never rectangular nor circular, but rhombs

with unequal acute and obtuse angles, or ellipses of varying fullness and narrowness. The shape of the ellipse changes with every shifting of the plate toward me or away from me; I do not notice this, it remains circular. Only at a considerable distance does it become clear to me that I do not "really" see it as a circle but as an ellipse.

This visual constancy, which is so divergent from the retinal images, is not some recently acquired capacity of man, but on the contrary a wholly primal kind of perception. When primitives have occasion to depict tables or plates they never draw them otherwise than as rectangles and circles, just as if they had never had images of rhombs and ellipses in their eyes. Considerable training is needed for visualization and portrayal of the purely optical situation as such, with all the distortions of perspective and proportion brought about by the locating of the object on the retina. The laws of perspective, as is well known, had first to be worked out laboriously by art, and there are whole peoples that have never discovered them.

It is evident how paradoxical these phenomena are, as long as perception by the specific senses only is acknowledged. Among the countless images that a plate projects upon my retina, according to its position relative to me, only one is circular, all the rest being elliptical; how do I happen to single out this one image that is seldom actualized and not only *think* of it as the "true" shape of the plate but also *see* it concretely and recognize it among the other shapes? And how do I happen to ascribe to this plate, which has a different sized image at every distance from me, a constant size? Vision alone would never be able to bring this about.

In reality, we do not see retinal images but objects, and—it must be constantly repeated—we see the latter with our whole person. As an object of my activity the plate is for me an identical thing having identical shape and size. To the sense of touch shape and size are likewise always the same; there are no distortions or shrivellings as on the retina. And when the plate is perceived by the eye alone, its potential perception by the other senses is involved, and I see it as this object in its size and shape.

Here the deviations of the retinal image reveal their positive value; while they do not change the object-perception, they determine the location of the object *in my personal space*. Perception of course means apprehending the existing situation of an object; the situation, however, consists above all of the relative position and distance of the object from *me*. The elliptical image of a definite size that the plate projects upon my retina does not make me see an elliptical object, but a circular object at a definite distance and angle. It is a unitary process of perception that presents a constant object to me in its spatial relationship to me at that particular instant.

This relationship to "me" as the spatial center brings up another intersensory factor in visual space. For the attributes of position above-below, right-left, etc. are at the outset qualities of my own personal space, given in a *perception of myself* quite independently of vision. It is only when my own dimensions are carried over into the objective world (p. 97) that visual experience also assumes the *above* and *below*. I see the ceiling *above*, i.e., as something near my personal "above" that may be reached by my moving "above"; the floor *below* as that which is in contact with my lower extremities.

Above and *below* in the retinal image of an object thus have no fixed connection with above and below in *experience*; and all the sophistries concerning how the individual can see things right side up when their retinal image is inverted, have been idle.

Our principle is confirmed empirically by the fact that there is no absolute relation between the position of the image on the retina and the way position is seen.

(a) *Misplaced positions.* At primitive stages of mental development spatial patterns are recognized and reproduced independently of their position relative to the observer. Children look at pictures that are upside down, and often form figures, numbers, letters inverted or in mirror script; and they never notice the substitution of above for below, right for left.

(b) *Modification of visual position.* As is known, the microscope turns the image of objects 180° . The practiced microscopist has become so accustomed to this that he "sees" things in their proper position despite the turning.

A famous experiment is that of Stratton, who wore glasses uninterruptedly for an entire week, that turned his visible surroundings 180° . At the start he was completely disoriented, everything appearing to be upside down in actuality; the floor was seen above and the furniture hanging down from it, etc. After a few days he began to grow accustomed to the new arrangement, and at the end of the experiment those visual impressions were "above" that indicated directing his movements upwards, and vice versa; hence a new intersensory perceptual experience of above and below had occurred.

3. THE PERCEPTION OF TIME

For *time*, the problem of perception is differently located than for space. Perception is concerned with the *present*; as long as the present was regarded in the manner of mathematics as a *point* in time, it was impossible to squeeze into this point the experience of succession or of duration. Theories were therefore devised that run about as follows: At a later point in time the original perception continues

active as imagery that can be connected or compared with the perception that is then occurring.

There is surely temporal experience of this sort, in observing slow movement for instance. If I look at the hour hand of a clock repeatedly, it appears to be in a position of rest at each moment of perceiving. But in the second moment of perceiving I can recall its former and different position and draw the conclusion that the hand has moved in the mean time. In this case the temporal process is experienced in terms of imagery or ideation. But is this the only mode of experience of movements?

On looking at the second-hand of a watch I have an entirely different experience. I "see" it move, just as concretely as I see its color and size.

Another example: I hear the sound "trá la la." The succession of the three syllables and the dactylic rhythm are present in the unitary and immediate experience. Moreover, they are present as a succession and a temporal pattern. The impression of the first two syllables does not creep into the last, thereby giving me at the end the "sensation" of the third simultaneously with the "images" of the others. This end "point" is not at all isolated in my perception, for the entire stretch of time is included.

Hence there are perceptions which, without losing their inner unity and concreteness, occupy a certain span of time and can have this span as their object. The span of time within which direct perception of time is possible I call the "present interval."¹

The paradox that seems to be lodged in this "extended present" is nowadays overcome inasmuch as we no longer regard the mathematical point of view as holding for personal activity.² To be sure, the psychical present interval is narrowly limited; this is the reason I cannot apprehend the changes of position of the hour hand of the clock by a single act of inspection, and must in this case resort to comparison and thought.

If I tap out a measure of waltz time, I hear the rhythm; but if I allow three seconds to elapse between the single beats the rhythmic experience is entirely lost; I then have three separate perceptions which while referable to one another in thinking, no longer arrange themselves into an immediate experience of a rhythmical pattern.

To what sense modality do perceptions of time belong? Our examples show at once that there is no monopoly on them; perceptions of time are definitely *intersensory*. I perceive *duration* when I hear the brook babbling, *see* a bird soaring, perceive the *pressure* of a

¹ See my article on *Psychische Präsenzzeit*, 1897.

² See p. 93.

trunk I am carrying. The fundamental temporal form, *rhythm*, is by no means the solely auditory phenomenon that it has often been taken for. I can have complete rhythmical experience of the movements of a dancer that I see in the silent cinema; there is also pure contactual rhythm, as when anyone beats time gently with the finger on the back of my hand.

Hearing, of course, occupies a predominant position in the perception of temporal patterns; it takes the same sort of lead as vision in the perception of space. The sense of hearing is but little adapted to simultaneous juxtapositions (which is just the strong point of vision); far more so to succession. In the auditory perception of speech and music there is a greater qualitative range and gradation of temporal perceptual patterns than in any other sense modality. Completely non-auditory perceptions of temporal patterns are possible, of course, as our examples show, but rare. At the least, auditory *accompaniment* is required if time is to figure impressively in the organization of the perception. We thus have music for marching and work-songs; in the dance the coöperation of audible rhythms is well-nigh obligatory.

The real uniqueness of temporal perception is revealed only in getting away from temporal processes in the outside world. In space perception a relative separation of external space from one's own space is still possible; with time, in the mental present, external time and one's own time can no longer be separated.¹ Every temporal process that I perceive outside is equally a bit of my own life process, which I perceive within me. The duration of the brook's babbling, to which I am listening, is also the duration of my listening itself. The rhythm of the dancers whom I am watching also imparts rhythm to my impulses to movement and to my total bodily attitude.

That is why the *kinaesthetic* content purveyed by my body can never be excluded from the perception of time; my own movements do not merely order in time all actions that I perform, but occur as accompaniments to the perception of external temporal patterns.

We must dive into still more deeply embedded properties of experience, that cannot be classified under any sense modality, but rather under the head of a diffuse feeling for time. In this emotional experience subject- and object-references are fused together. The feeling for time called *ennui* not only makes time drag for *me*, but makes a *lecture* to which I have to listen appear extraordinarily long.

The perception of time is, then, both intersensory and charged with a pre-sensory component. Only in imagining and thinking about time, which processes develop from temporal perception, is it possible to objectify temporal experience.

¹ It is on this account that Kant set up temporal consciousness as the "internal sense" in contrast with the "external sense" of spatial consciousness.

II. KINSHIP OF THE SENSES

Having treated the connection between the senses as a functional coöperation, we must now discuss its common *qualities*, its harmony. Elsewhere we emphasized the disparateness of the sense modalities (p. 121). But in so doing we gave only part of the picture, as is now apparent; for in spite of all the diversities there are fundamental similarities between the senses.

Human *language*¹ furnishes an initial approach to the topic. Language makes use to a considerable extent of terms for describing the qualities of *one* sense that are borrowed from another sense.

Thus even such a highly developed field as the perception of *colors* has specific designations only for the four principal colors besides black and white, gray and brown. But the language is rich in descriptions like "saturated," "shrieking," "dull," colors. When the painter speaks of "cold, hard tones" he means visual effects as expressed by characteristics of temperature, touch, and sound. The *auditory* analogy to "color tone" (shade) is "clang color" (timbre); in this field we encounter "bright" and "dark," "high" and "deep," "sharp" and "round" tones. The sense department of olfaction, which possesses no sort of independent quality designation, must borrow from the nomenclature of taste and touch; "sweet," "sour," "soft," "biting" odors.

Onomatopoeic transfer may also be mentioned. It consists of designations for non-auditory sense impressions whose characteristics are copied by the auditory effect of the speech. On *hearing* the words "glimmer" and "glitter," we immediately sense the similarity between the auditory description and the visual situation described. In the auditory impressions of the nouns "tip" and "spit" the tactual experience of a sharp point frequently occurs.

The immediate experience of congruous sensations in different sense departments (not depending on language) is called *synesthesia*. Here we must distinguish between universal and individual phenomena. Goethe's experience of the blue shades as "cold" and the red as "warm" holds more or less uniformly for everybody with normal color sensitivity; likewise his statement that through purple glass the scenery looked as if the trumpet of the last judgment were sounding. It seems quite evident that musical tones are less "bright" when their pitch is low than when it is high. We can "hear" the "brightness" of the treble tones, or, to shift over to another sense department, the "sweetness" of the violin.

In the narrow sense, however, synesthesia is taken to mean the intensification and individualizing of such relationships, for only a

¹ In the orginal edition similar examples are taken from German.

small number of people. For them the pairing of certain phenomena in one sense department with those in another is inevitable; they have no single quality of perception. Music heard becomes a sequence of colors, forms, or tints; individual vowels or words are bathed in specific colors.

The type of synaesthesia presented in these examples, in which actual sound impressions arouse apparent visual sensations ("photisms"), is most frequent, but there are other forms as well. Individual differences are striking. There are not two individuals given to synaesthesia who correlate the same colors with the vowel series; the photisms that they set up for musical constructions, e.g., single tones, full chords, motifs, whole pieces, are capricious and refractory to all generalizing. Very interesting material on this has been collected by numerous investigators in recent years,¹ but the results in terms of laws are still extremely meager. At the same time the synaesthetic connection for a particular individual is not arbitrary or incidental but constant, and frequently so taken for granted that he is greatly surprised because other people are unable to experience the same things.

The psychological interpretation of these intersensory kinships presents many difficulties which have not yet been cleared up. At the outset there is the attempt to explain them by acquired associations. Thus the vowel sound *Oo* might carry with it a blue photism because it is dominant in the word "blue." A drawn-out tune, like a funeral march, might be accompanied by photisms in dark, black, or gray shades, because in our experience in western civilization dirges and black clothing and decorations belong together. The tones of the shepherd's pipes might appear green because of association with the total situation in the woods and fields.

But admitting that such accounts are occasionally apt, they could at best serve as incidental motives for the occurrence of definite synaesthesias, without explaining why they occur at all. For in terms of experience it is not simply a question of certain visual images being "associated" with auditory perceptions, but of something much more profound, a kind of *identification*, a fusing of experience from the two fields of sensation. If external influences and associations are taken into consideration at all, it must be asked why bare association changes into such a fusion. Here there are two possibilities. One comes out of our example of dirges and the color black. The experience of their coexistence (at funerals and memorial services) arouses a strong synaesthetic readiness on the part of the subject for the *welding* of these special auditory and visual bits of experience.

¹ Most recently, especially by Anschütz and his pupils; compare also the investigations of Argelander and Bos.

The fact that these two kinds of manifestation have been chosen for mourning is felt to be quite natural because of a sense of the common expressiveness of the two domains. The other possibility: Impressions from two sense departments might "accidentally" coincide on an occasion that is of decisive significance for the subject, so that the total experience is branded into the mind along with all pertinent features, as an inseparable whole, and (as a "trauma") continue active. For the person who has had experience of a nocturnal conflagration under exciting circumstances, the clanging of bells will forever after be colored with an intense red (which is something quite different from the mere associative joining of the image of the red flames with these sounds.)

What happens is a kind of regression to that primitive mode of perceiving, in which not only single objectified perceptual patterns, but a total reaction of the person to the diffuse total situation are involved.

We now arrive at the true basis of all intersensory kinship. It is no longer a question of a paired reference of a single sensation to a single stimulus, but of *total impression* and *total expression*. When the individual plunges into a definite stimulus situation with his whole self, the situation ceases to be sensorially specific (e.g., solely auditory) for him. Total conversions of his personal setting result.

This has been proved experimentally by Werner, Zietz, and others, by producing tones of a definite pitch in a room under definite illumination and varying the intensity or color of illumination with the tone objectively constant, and the pitch with the illumination constant. For a certain type of subjects the changing of one kind of stimulus causes a change in the impressions of the other kind; the tone, held constant, sounds higher when the room is brightened, etc. More striking is another result: the fusing of both changes into a subjective union, leaving the subject uncertain which sense is really perceiving the variation; the tone itself, on the introduction of red illumination, seems to take on a red color; the more brightly lighted room itself seems to sound with a higher pitch.

Two other consequences are worthy of notice. Not only may the boundaries between the two senses disappear, but so too may the separation between sensitivity and motility. There combines with the total impression a total bodily agitation or attitude; the person, on exposing himself fully to the impression, sets up a correspondence with it, and finally projects it overtly as his own *expression*. In this way, a kind of "synkinesis" may occur. Mental assimilation of geometrical forms or architectonic patterns can be accomplished only through some inner imitation of the tensions and energy distribution of the pattern; it is necessary for one to reconstruct an audible rhythm in one's own motor system in order to experience it fully.

Ottomar Rutz has reduced these connections to a system in regard to the reproduction of musical works; he holds that the works of each composer necessitate a particular bodily posture if they are to be played or sung properly.

It is not simply a question of impression and expression on the part of the person as perceiver, but also of expression on the part of the object perceived. Color and sound, hardness and warmth, are not only attributes of things, given in sensation, but the veil through which the sensible content, the inner dynamic arrangement, of the *object* presents itself to us. When we see a great actor on the stage, do we know how much of the total expression that we experience comes from the perceived sound of his voice, and how much from the visual image of his gestures? Even when we temporarily close our eyes and merely listen to him, what we hear is not present *as* sound, but as the avenue to the total expression. H. Werner calls this kind of object perception "physiognomical perception."¹ There are large individual differences in the capacity for it; one individual hears a piece of music merely as a formal structure of tonal arrangements, another "expressionistically" as the expression of energy and emotion, the purely auditory effect becoming almost secondary. One individual experiences visual forms as geometrical patterns, another looks beyond these upon dynamic tensions, resistances, and harmonies.

III. THE VICARIATE OF SENSES

The reciprocity and kinship of the senses make it possible for one sense organ to come into the breach when another is functionally disabled temporarily or permanently ("sense organ vicariate"). We are all familiar with occasional vicarious functioning of the senses; in the pitch dark touch suddenly comes to the fore and gives us information that is otherwise received through vision alone. Amid the deafening tumult of a hurricane or of a factory, which rules out verbal communication, we take to gestures, that is, to visual signs.

It is with those *deprived* of one sense or another that the senses operate vicariously in greatest measure. The perceptual world of the blind would be incomprehensible if everything known through vision were simply to be subtracted from the world as it is to normal people, for a great deal that we ordinarily take in by sight is felt or heard by the blind. To the deaf the world of spoken language, of noise, of music, is not completely blotted out; they read lips; they become sensitive to jarrings and fine vibrations which we are also able to experience, but which we are not accustomed to heed nor to utilize consciously.

¹ See p. 129.

To be sure, vicarious functioning is never a full equivalent. Even the most practiced finger of the blind man can in no case mediate the specific quality of color or brightness. It is nevertheless sufficiently amazing that one sense can compensate to such a high degree another that has been lost.

In the sensory vicariate, *vicarious experience* and *vicarious performance* must be distinguished. In terms of experience those features of the impression are most prominent which are *common* to all sensation; important here is the personal background, on the level of which there is no specific separation of the individual senses.

Thus for example the general effect of music upon the vital sphere, inducing sympathetic vibration of the whole organism, is open to the deaf; under certain circumstances the pure experience of vibration can, with practice, even become so keen and differentiated as to afford a simple sort of aesthetic appreciation of pattern.

With the blind, space perception is strongly rooted in experience of their own spatiality and mobility; on this basis (which is common to all people) they erect an external space chiefly through the sense of touch. Their space as experienced is of course very limited as to scope of movement and experience in comparison with that of those having normal sight; but it opens the way to all essential spatial attributes of things, like shape, position, direction, size, proportions, etc. (see pp. 153, 221).

As has been suggested, vicarious experience can be *trained*, and is also subject to the influence of education. It is not at all outside the realm of pedagogical possibility for the deaf and dumb to develop an aesthetic vibratory pleasure in simple musical selections, or in vibrational works that could be produced for the purpose; nor for the blind to be made acquainted with the range of form and beauty of sculptures by touching them.

Helen Keller, who is both deaf and blind, is convinced that she gets pleasure out of music pieces (whose rhythm and vibration she feels by holding her hand on the instrument or on the throat of the singer, or also by transfer through the air) and out of works of sculpture that she touches. The deaf Swiss writer Sutermeister has become in his late adulthood a musical enthusiast and an inveterate attendant at concerts, as a result of his discovery of intense aesthetic enjoyment of the surging of sound vibrations. In these and similar instances, to be sure, the possibility of autosuggestion, and the understandable desire to make real and accessible an area of experience open to normal people, must also be taken into account; but there is no justification for attempting to lay it all to "self-deception." Again, very large individual differences have to be reckoned with. It would be reasonable to expect to develop vicarious experience to the point of aesthetic enjoyment for only a minority of the blind and deaf.

Far less doubtful is the possibility of effective education in the domain of vicarious performance. This is not concerned with the specific kind of experience; all that is needed is to execute in terms of other senses certain activities that are performed by normal people with the aid of vision or audition. The planned production of such substitutes and systematic training in their use increases to a considerable degree the personal and social efficiency of those deprived of senses.

These are a few outstanding examples: the reading of Braille, which is formed of raised punctiform figures; the training of blind textile workers in discriminating the size of thread, the kind of material, etc. by touch; the educating of the deaf and dumb to read speech from the lips. At the present time attempts are being made in some quarters to invent machines that will transfer the spoken word to the fingers of the deaf and dumb by means of vibrations.

The most momentous outcome of systematically contrived vicarious functioning has thus far been attained by the deaf and blind people. The writings of Helen Keller give impressive evidence that is important theoretically as well as practically: It does not depend so much upon the sensory material (light, sound, pressure) as upon what the self-active personality is able to make of the sensory raw material, however scanty and limited it may be. And with the aid of the most varied sensory channels, the educator has a chance to set into operation the common personal background of all sense perception and thereby mental activity in general.¹

¹ See also my monograph on Helen Keller.

CHAPTER IX

ILLUSIONS. LIMITS AND LIMENS OF PERCEPTION

I. SENSORY ILLUSIONS

"A sensory illusion is a sense perception whose naïve object-reference is subject to correction or rejection by critical object-reference."

In itself, this is an epistemological, not a psychological definition. Nevertheless, sensory illusions offer numerous *psychological* problems, which are concerned both with their occurrence and make-up, and with the existing or lacking insight into the error.

I. CRITERIA

But how are we able to notice that a sense perception is erroneous? The criteria of objectivity, by which I can test the correctness or incorrectness of my sense perceptions, are of very different kinds. The principal criterion is *myself*. Any given *momentary* perception belongs to a larger nexus of meaning, the members of which must be in harmony with one another; if instead of the expected agreement a disagreement suddenly occurs, it is probable that the perception is incorrect.

Example: I see an object in front of me, attempt to seize it, and snatch at the empty air; then I notice that it was a reflection of the object, in a convex mirror. I have been tricked by an "optical illusion."

From this example something else may be learned. In theory it would have been proper to interpret the discrepancy between seeing and grasping so that the visual perception was correct and the *seizing* illusory. Why is this not done? Because touch occupies a special position within perception. Whatever may be grasped, whatever offers resistance to touch, is indisputably present and is beyond the possibility of any illusion. In consequence, the sense of touch is and remains the favored *control device* for the other senses which are subject to illusion. This is very plainly the case for the child, who attempts to seize everything that he sees or hears, in order to be certain of its complete reality. The mature adult too seeks reassurance by clutching at and feeling anything that is vague and questionable to the other senses; handling is more reliable than looking.

This holds, of course, only so long as it is a question of determining the bare existence or very definite tactal attributes of things (hardness, thickness, roughness, etc.). Whenever more precise attributes of objects, quantitatively and qualitatively, are to be identified, the sense of touch is often inferior to the other senses. There are "tactual illusions."¹

There is another control device of a *social* nature. In a common area of experience a perception appears illusory to one person unless the rest also have it. "Didn't the door go just then?" None of the others present heard it. "Then I must have been fooled." Naturally this criterion is not absolutely trustworthy. Perhaps I have keener hearing or am more easily distracted by noises than the others. In general, however, the agreement of the majority, especially if they are people with "normal" senses, carries against the perception of one individual.

This is also true in science. Many an investigator thinks he observes some sort of liminal change, say in the form or color of an object, in a particular experiment; if no other investigator can achieve the same perception, it is set down as an illusion for the first.

The third objective criterion is *measurement*. In the accompanying figure I "see" the horizontals in different lengths; if someone else judges them to be equal I do not believe him—until a ruler laid to them convinces me that I have had a sensory illusion. For it is the nature of measuring instruments to prove equality, difference, and degree of difference independently of the fluctuations and limitations of perception.

The last criterion is the *total consistency* of things as worked out by scientific theory. It is a most compelling perception that the sun moves around the earth and not the earth around the sun; but if I accept the Copernican theory as true, I must also acknowledge my perception to be illusory.

2. TYPES OF ILLUSIONS

Considered from the point of view of the *object*, sensory illusions may be divided into hallucinations, illusions of quality, and illusions of quantity.

Hallucinations are "illusions of existence"; i.e., something is per-

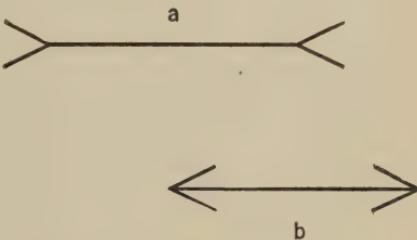


FIG. 10. THE MÜLLER-LYER ILLUSION

¹ These have been studied systematically by G. Révész.

ceived in the external world without there being anything to elicit the perception. Lady Macbeth continually hallucinates blood on her hands; the alcoholic sees "pink elephants"; the religious ecstatic hears voices. Olfactory hallucinations (the smell of corpses, of blood) also occur. Hallucinations, however, are not confined to such pathological instances; occasionally there is hallucination within normal mental activity, in particular in those people who have eidetic tendencies.¹

With *illusions of quality* there is really an external stimulus, which calls forth a perception; but the *make-up* of the perceived object is mistaken. Here belong the great majority of every day errors of perception; all mis-hearing and mis-reading, all coloring of things by emotion. (Example: The apprehensive nocturnal traveller takes an indistinct tree stump for a crouching bandit.)

Illusions of *quantity* pertain to size, intensity, distance, number of objects of perception. The moon when rising looks much larger than at the zenith. Human voices sound especially loud in the mountain solitude and thus appear to be nearer. Clothing with vertical stripes makes the wearer appear taller.

Well explored by psychologists is the wide domain of geometrical optical illusions, in which line lengths, angle sizes, and proportions of figures can be altered experimentally to produce greater or lesser degrees of illusion (see examples on pp. 165 and 167).²

Also under illusions of quantity come the phenomena of contrast: an individual of medium size appears small among large, and large among small people. Two pieces of paper of the same medium gray give rise to such different impressions against black and white backgrounds (the black causing a brighter, the white a darker tone) that a naïve observer is totally incapable of believing that they are objectively equal.

3. CAUSES

We strike the truly psychological aspect of the problem only when we inquire into the *causes* of illusions. All sense perception depends upon three factors: the external stimulus situation, the specific excitation of the sense organ, and the total personal reaction. Accordingly as one of these three factors predominates there results another threefold classification of illusions, physical, peripheral (preferably sensory), and central (better, personal) illusions.

a. *Physical* illusions result from a particular kind or constellation of external stimulus conditions.

¹ See p. 201.

² The first systematic investigation was made by Theodor Lipps.

Examples: The distortion of the face seen in a curved mirror, the bent appearance of a straight stick plunged into water (the index of refraction being different for water than for air), a mirage occasioned by reflection under certain atmospheric conditions. An example from audition is the echo, from audition and vision the illusion that thunder and lightning occur at different times (resulting from the slower propagation of sound).

Viewed *psychologically*, these illusions in themselves lack interest; for one thing, however, they serve to delimit more clearly the other two types of illusions; then too they can be combined with the others. Such combinations are important above all in experiments, where definite physically conditioned illusions are purposely produced in order to study the mental effects of the stimuli.

Thus the stereoscope makes possible investigation of the psychological conditions of depth perception; the cinematograph illustrates the occurrence of the subjective impression of movement, etc.

b. Peripheral (or sensory) illusions depend upon processes in the sense organ itself. It is characteristic of them that insight into the illusion is incapable of altering the sense impression. For example, on a cold winter's day my right hand, exposed to the air, is cold; my left hand is warm in a fur-lined glove. If I stick both hands in tepid water, it is sensed as "warm" by the right hand and "cold" by the left, and the experience of a considerable difference in temperature persists in spite of my knowledge that the water has exactly the same temperature throughout. The explanation is that heat is conducted to the colder hand by the water and from the warmer hand; these differing excitations of the skin occasion temperature perceptions of opposite signs.

In the accompanying figure the white square on the black ground appears larger than the black square on the white ground. Both squares are really the same size. The stimulus intensity of the white square is not restricted in its effects to that portion of the retina that is directly covered by its image; the excitation spreads beyond the edges and overlaps neighboring portions of the retina. This is called *irradiation*. To the enlarged field of excitation corresponds the impression "larger." Conversely in the second figure the greater intensity of the surrounding field irradiates, and thus diminishes the inner black portion.

The *temporal* spreading of excitation can also bring about illusions in consequence of the *inertia* of the sense organ. Excitation of the sensitive region stimulated does not stop at the same instant the

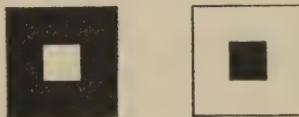


FIG. 11

stimulus is withdrawn, but falls off more or less slowly, the sensation, however, still persisting. If we hear a slowly waning sound (a bell note dying away, vanishing railroad train), toward the end we are very uncertain whether what we still hear depends upon persisting weak vibrations in the surrounding air, or upon the inertia of the ear, in which the excitation has not completely ceased. If a coin is pressed against the forehead by someone else, held there a while, and removed gently, there may be an illusion that it is still sticking to the forehead.

These inertia phenomena are best known and have the greatest variety in vision, where they are called *after-images*. If I move a glowing point (like that of a match head) rapidly in a circle in the dark, what is seen is not a progressively moving point but a motionless circle of light. In the cinema the individual picture-stimuli follow one another so rapidly that the excitation produced by each frame outlasts the interval of time before the next and gives an illusion of continuity. If I fixate the small white square (Fig. 11) for some time and then look at a uniform gray surface, there soon appears on the latter a dark square on a light background. In this case retinal inertia assumes a special "complementary" form. The process of excitation does not continue in its original form, but turns into its opposite before ceasing. (This is called a negative or complementary after-image.)

In the cases mentioned and in a great many others the peripheral origin of the illusion is indubitable. In many other illusions, however, this definiteness is lacking. For there are sources of illusion that arise apart from the sense organ under stimulation, or combine with peripheral causes in a manner difficult to disentangle. It is for this reason that in the theory of sensory illusions, which constitutes a very favorite and richly elaborated topic in psychology there have been and are offered highly debatable explanations for particular illusions.

c. *Personal (central) illusions.* The illusions which are not peripherally conditioned are the most interesting. They were formerly contrasted, as illusions of "judgment," with true "sensory" illusions. This was justified on the ground that every illusion can be *expressed* in the form of a false judgment, e.g., "over there in the dark corner a human form crouches" (the indistinctly seen object being, perhaps, a sack). But in actual experience such an illusion seldom depends upon an error of the capacity of judgment; it may have quite different sources, in terms of emotion, will, social behavior; it may proceed from a personal attitude toward the situation in which the specific, isolated causal factor cannot be distinguished. If an individual is in an especially excited condition of unstable equilibrium, sensory stimuli are very differently received and elaborated. Expectancy,

fear, desire, crowd contagion, change the personal significance of what is seen and heard. There were never so many illusory perceptions as in the first few days of the world war, when disguised spies, treasure vans, suspicious conversations, etc., could be allegedly noticed everywhere.

Suggestion too should be mentioned in this connection. Stand on any lively street corner and stare at the sky; reply to the questions of curious passers-by that a remarkable aircraft can be seen way up, very tiny and scarcely recognizable—and soon others will also think they see this non-existent object.

During a lecture Alfred Binet once made the following experiment: He told his auditors he wanted to perform an experiment on olfactory sensitivity by opening bottles containing evil smelling liquids in extreme dilution. He thereby created a definite attitude of expectancy. When he opened the bottles those present not only noticed with antipathy the promised bad odors, but responded with choking, turning away, even with expressive movements of nausea—to distilled water.

Preparatory tensions and distracted attention also play a decided part in the perception of sleight-of-hand tricks and occult manifestations. In both cases susceptibility to the illusions is raised to the highest pitch by creating a total atmosphere that is at once provocative and soporific, through hocus pocus, dim lights, protracted suspense. On once realizing how little people are proof against sensory illusions even under every day circumstances and out in the open, one can no longer be astonished when confronted with the testimony of those who take part in spiritistic *séances* and have eventually seen, heard, and even touched some supernatural phenomenon.

People who are naturally inclined toward impersonal observation are far less subject to central perceptual illusions than people of the subjective type, for whom every perception is embedded in the total wish- and fear-structure of personality. But it is unusual and abnormal mental conditions in particular that are capable of producing susceptibility to sensory illusions. Those who are eidetic occasionally interchange their eidetic images with genuine perceptions. In states of religious ecstasy visions and voices appear and are accepted as external reality. And in various forms of mental disease hallucinations and illusions of quality are realistic to the sufferer.

In all these instances the true origin of the sensory illusion is central and not peripheral. Hyperfunction or disturbed function of the sense organ may, of course, itself be involved. But many people have buzzing in the ears or swimming before the eyes without illusions resulting; internal auditory or visual excitations are objectified falsely (as "voices," as "pink elephants") only when an unhealthy total

make-up of the person predisposes to this mistaken *elaboration* of the sense impressions.

Illusions of "judgment" in the strict sense occasionally occur, in cases where the meaning of a perception is discovered through interpretative judgment alone. Well known illustrations are furnished by certain contrast illusions. If I see someone of medium height in a circle of unusually large people, he not only appears "smaller" to me, but absolutely small. The *difference* in size, immediately apprehended by sensation, leads to a judgment of *absolute* size. If I am shown the error of my supposition, I no longer see the person as small, but as in his natural medium size. Such change of perception through insight into the cause of the illusion is, as we concluded above, not possible with peripheral illusions.

This method of approach also proves that the opinion of many theoretical psychologists, that *all* contrast illusions are illusions of *judgment*, is untenable. Color contrast, for instance, cannot be banished from perception, and is therefore not traceable (as Helmholtz believed) to deceptive judgment. If I look at a neutral gray disk on a green background under tissue paper, the disk becomes reddish, i.e., its hue shifts in the direction of the color opposite to green. My *knowledge* that in reality the disk is colorless gray, does not alter in the least the sensory evidence of the impression of red. Hence the cause must lie in a change of excitation in the retina.

d. In conclusion we shall show how one and the same illusion may be explained by very diverse theories. The Müller-Lyer figure (p. 165) contains two horizontal lines of objectively equal lengths, the estimation of which is materially affected by the added wings.

Possible explanations: (1) Visual explanation of Gestalt psychology. The horizontal lines cannot be seen in isolation, but only as sustaining features of the total figure. The horizontal difference in spread of the forms as a whole is what is noticed in the linear horizontal portions. (2) Kinaesthetic explanation. On following the course of the horizontal lines with eye movement, this movement is halted abruptly in *b* by the acute angles, while the obtuse angles in *a* permit the eye movement to run out slowly. Since the amount of movement is interpreted as the index of length of line covered by the eye, the upper line appears longer. (3) Explanation by empathy (Lipps). The figures are not seen as static constructions of lines, but dynamically, as manifestations of energy, with which I in some way identify myself personally. The lower line draws itself in, "shortening" itself; the upper stretches itself out, "lengthening" itself. We are even inclined to augment this tendency by corresponding movements of our own body.

Of these attempts at explanation the second is least satisfactory, since the illusion occurs when the eyes do not move. The other two explanations invoke respectively the two kinds of perception that we

have designated as "salient" and "embedded." In the first the visual impression of form is isolated as such; in the other, the impression is experienced not only with the eye but by the entire person. Since both processes operate in every actual perception, but in different proportions, both causes of the illusion are applicable. There are people and situations dominated more by the static Gestalt tendency, and others dominated more by the dynamic empathic tendency. Any generic ascription of the illusion to one of these two tendencies alone appears erroneous.

II. LIMITS AND LIMENS OF PERCEPTION

Physics teaches that the objective sources of stimulation form graded series, and that the gradations may be measured. Psychology points to similar series with respect to the contents of perception. The relations between the stimulus gradations and the degrees of perception form the field of investigation of *psychophysics* (see p. 21).

I. THE SERIAL NATURE OF PERCEPTION

Perceptions may be compared serially, i.e., their difference as experienced expressed by "more or less." Perceptions differ in *intensity*. One lamp shines more brightly than another, the noise of an approaching railroad train increases; one rose has much fragrance, another little, etc. They differ in *extensity*. Greater or lesser length, height, breadth, etc. can be seen and felt; a longer or shorter distance can be seen and heard. Moreover, some perceptual *qualities* obey the principle of gradation. One tone has a higher pitch than another; one shade of red impresses as more saturated than another. Finally they differ in *number*; one row of dots may be seen as containing more dots than another.

All these differences are *serial* in nature. If I have three or more impressions, a, b, c . . . of difference in brightness (length, pitch number, etc.), c is more different in experience from a than is b; b clearly lies between a and c.

Extensity and number can be measured psychologically; individual impressions can be reported in multiples and units. For example, one can say, in disregard of the objective value of the stimulus, that this line appears three times as long to me as the other. Or that the number of dots in this group of dots appears double that of the other.

Analogous reports are not possible for intensity. If I compare the brightness of two lamps x and y, I find x brighter (a little brighter, much brighter) than y; but the report that the impression produced by x is three times as strong as that produced by y, would be absurd.¹ The same is true of differences in quality.

¹ When such reports are nevertheless made, it is no longer the experience but the estimated *objective* brightness of the stimulus that is meant.

If purely psychological measurement is to be applied to intensities or qualities, it can be done only by locating them in terms of extensity, i.e., by taking the *intervals* occurring between each two intensities or qualities.

I have four pieces of gray paper, a, b, c, d, of different brightness. I can compare the *difference* in brightness between a and b with that between b and c and with that between c and d, and experience all three distances as equal under the proper conditions. Accordingly the distance in brightness from a to c would appear twice as great as that from c to d.

The series in which quantitative degrees of perception can be arranged are not infinite. But their limits at both ends are entirely different in nature. The lower limit is always a zero; it is the disappearance of all perception. If a tone becomes fainter and fainter, it finally ceases altogether to exist in my experience. It is the same with everything else. The upper limit, on the other hand, denotes saturation and supersaturation; it is the highest degree of strength or breadth of the impression that can be taken in, beyond which no further gradation of a perceptual series occurs, but a diffuse, total personal reaction of disturbance takes place. Thus there results deafening from too intense impressions of sound, blinding from too strong impressions of light, and frustration at the impossibility of conceiving the enormous extent of the ocean.

The systems of color and pitch previously discussed assume another position. They likewise form *series*, so that a definite item of perception is experienced as lying between two others; the distance between any two items also appears different in size. But the serial formation is complicated by other factors, and hence cannot be represented by a straight line (see the color "circle," the pitch "spiral").¹ Moreover, the termini of the series are constituted in a different way. The color series has no boundary at all, since it runs back into itself; the pitch series is terminated at *both* ends by a zero (the absence of any tonal experience with very low and very high frequencies).

2. THRESHOLDS AND THE WEBER-FECHNER LAW

a. *Outer and inner thresholds.* The kinds of psychological series are correlated with attributes of the stimuli defined physically. Thus *intensity* in visual and auditory perception corresponds to the *amplitude* of light and sound waves, impressions of varying *heaviness* to the physical weights of the stimuli, different experience of *extensity* to measurable physical amounts of length, area, volume, time. For the two psychological ranges just mentioned, of pitch and color,

¹ See pp. 140, 141.

there is a correlative measure of the stimulus, that is, the *number* of light and sound waves in a second (or the *lengths* of the waves, which are in inverse proportion to the frequency).

But this correspondence is anything but perfect. *The world of objective stimulus ranges is of totally different extent and variety from the world of perceptual ranges open to experience.* Disregarding the fact that there are large physical areas (such as that of magnetism) that are not immediately accessible to sense perception, even within the domain of the perceptible the physical ranges are infinitely superior to the psychological. This is as true of the outer limits as of the inner range.

Out of every range of physical processes sensitivity cuts a narrow sector within which stimuli are able to elicit perceptions. The degrees of stimulation that bound each sector are called *outer thresholds*. There is a *lower threshold* where the perception just exceeds zero; the *terminal stimulus* occurs where increase of the stimulus no longer raises the specific intensity of the perception but produces a total personal effect (blindness, deafness, pain etc.); the *upper threshold* where further increase of the stimulus extinguishes perception.

Within the area of stimulation included between these outer thresholds no parallel correspondence obtains between perceptual and stimulus ranges. While increase or decrease in intensity of the physical stimulus between any two points covers an infinite number of values (for example, objective intensity of light may be varied *continuously* in either direction), only a narrowly limited number of steps can be distinguished in perception.

That difference between two stimuli that is *just able* to produce a difference in perception is designated the *inner threshold* or *difference limen*. If I hold a vessel half full of water in my hand I have a definite perception of weight. If more water is added in a small trickle, the physical weight constantly increases, but the perception of weight does not change immediately; the difference between the stimuli remains for a time *subliminal*. Only after an appreciable increment has been added does the impression "heavier" arise; the difference is "just noticeable" or "liminal" when the difference limen is reached.

The capacity for just noticing stimulus differences has been called *difference sensitivity*¹ since Fechner's time; its delicacy is inversely proportional to the value of the difference limen. One who notices the increment of weight (in the above example) on the addition of 10 grams has a smaller difference limen and hence a higher difference sensitivity than one who (starting with the same weight) perceives a change only on the addition of 20 grams.

If the difference limen is expressed in fixed physical measures (e.g.,

¹ *Unterschieds-Empfindlichkeit.*

in grams, length, photometric units, etc.), it is called the *absolute difference limen*. In general this limen is *not* constant. It is not only different for different people or in different perceptual situations, but it varies, other things being equal, with changes of the *initial stimulus*.

If it took 10 grams in our example to produce a perception of difference in the vessel half full of water, when a vessel twice as heavy is used it takes not 10 but 20 grams more to reach the limen, and with a vessel four times as heavy, 40 grams, etc. Thus it is not a question of the difference between the initial stimulus and the second stimulus, but of the relation of the *additional stimulus* to the initial stimulus; this relation, the "relative difference limen," is *constant* (within limits to be discussed later).

If we designate the initial stimulus as R , and the increment required to be just noticeable as dR , this formula follows:

$$\frac{dR}{R} = \text{constant.}$$

This is the famous "psychophysical law," today generally called the "Weber-Fechner law." A century ago (1834) Ernst Heinrich Weber discovered this peculiar relation of measure for perception of weight; Fechner later sought to establish the formula for many other areas of sensation.

b. *Experimental Study of the Weber-Fechner Law.* For several decades psychophysical measurement of difference limens remained the focus of the work of experimental psychology. All sense departments were minutely tested, and the most varied methods of experiment and calculation were worked out.

In the "methods of *judgment*" pairs of stimuli are presented, the members of which are to be compared with each other; the experimental subject reports whether stimulus b is equal to stimulus a, or seems to be greater or less. By employing markedly different initial stimuli, changing the stimulus distance between a and b, and frequently repeating the presentation of the individual pairs of stimuli, pairs of stimuli are finally found for which the judgments "equal" and "different" approximately balance; if these pairs of stimuli thus selected, although of very different orders of intensity, nevertheless show approximately the same *relation* of intensity, it is a sign of the validity of the above law.

It is otherwise with the "methods of *determination*." Here the subject must himself find out the pair of stimuli that corresponds to certain requirements. Beside a surface of constant brightness another may be presented whose brightness is gradually diminished or increased; the subject reports the point at which the compared brightness just starts or stops differing from the first. Or the instructions may cover the most

precise determination of subjective *equality*, e.g., the drawing of a line that is just as long as a given line, or the tuning of a string so that its tone is of the same height as another tone just heard. Since ideal equality can never be attained, what is measured is the *error* made; this error, that is, the range within which objective differences pass unnoticed, has also been shown to have a constant relation, in general, to the initial stimulus.

The method of determination may be carried both below and above the limen; in the latter case we deal with differences in perception that extend far beyond the difference limen. Here *intensity distances*, referred to above (p. 172), may be put to use.

For instance, if I show the subject a very light and a very dark gray as fixed limits, and then a series of grays lying in between, instructing him to select the one that seems to belong *midway* between the limiting cases, the result is as follows:

Let the physical intensity (which may be determined by photometrics) of the light gray be represented by the value 8, that of the dark gray by 2. The choice of the subjective "mid-point" will not fall on brightness 5 (which is the same distance away photometrically from the two ends, that is, three units in each direction), but on brightness 4, which stands in the same *proportion* to the two ends; $2:4=4:8$.

Summarizing all these findings, which were obtained by a variety of methods, we may formulate the result as follows: *In order to bring about liminal or equal supraliminal differences in perception, the stimuli must be not a constant distance apart, but in a constant relation to each other.* Fechner, who coördinated liminal, subliminal, and supraliminal differences, gave the law its general formulation: *If sensation is to increase in an arithmetic series, the stimulus must increase in a geometric series.* Or in brief form, $S = \log R$.¹

As for *empirical confirmation* of the law, the cumulative experimental investigations that followed Fechner's formulation considerably damped the optimism over it. We know today that it is not a "universal law" of the same order as the universal, mathematically formulated laws of physics and chemistry, but rather a mere relationship that holds for a number of sense departments with fair approximation, but even in these, never for the entire range, but only the middle section. This may be demonstrated by a few numerical values.

The law displays relatively the clearest and most consistent application to *brightness intensities*. As our examples showed, it holds here not only for liminal and subliminal, but for high supraliminal differences; and this covers a wide range. In their time König and Brodhun² made use of brightnesses ranging from the objective values 1 (paper illuminated by a

¹ The mathematical derivation of this much disputed formula cannot be given here; on this point compare the discussions in current textbooks.

² After Ebbinghaus, *Grundzüge*, Vol. I, p. 523.

candle $\frac{3}{4}$ meter away) to 200,000 (illumination by a strong arc light but a few centimeters away). We select a few typical figures from their results.

<i>Objective Brightness Intensities</i>	<i>Relative Difference Limens</i>
10	$\frac{1}{21}$
100	$\frac{1}{40}$
1000	$\frac{1}{57}$
2000	$\frac{1}{59}$
20,000	$\frac{1}{57}$
50,000	$\frac{1}{47}$
100,000	$\frac{1}{34}$

Thus for brightnesses between 1000 and 20,000 an increase in intensity of the stimulus of not quite 2 per cent is fairly uniformly sufficient to produce a subjective effect of difference.

This value of 2 per cent for the relative difference limen is dependent, however, upon the particular experimental conditions, those of the above experiment not being very favorable. Other experimenters have found a much smaller limen (about 1 per cent) for the comparison of brightnesses of different orders of intensity. On the other hand the limens become larger if instead of presenting two brightnesses simultaneously they are presented in immediate succession. My own investigations of such alteration of brightness yielded, along with validation of the Weber-Fechner law, limens of about 3 per cent.

For *lifted weights*—the study of which by Ernst Heinrich Weber furnished the point of departure for the whole problem—experiments show a constancy of the relative limen between the limiting stimuli 2000 grams to 6000 grams. On the whole the limen is much larger than that for brightness; under favorable conditions it amounts to 10 per cent. Beyond the stimulus values mentioned the relative difference sensitivity becomes coarser going downward, but very surprisingly, more delicate going upward.

In the passive perception of weight, where pressure is exerted upon a quiescent part of the body, the principle also holds. Between the limiting stimuli 50 grams and 2000 grams the index finger has a difference limen of about 5 per cent.

Difference sensitivity for *extensity* of stimuli is also pertinent, especially for stimuli that are received by means of the eyes ("visual space discrimination"). If lines are compared with one another for length, and surfaces for area, a difference of about 2 per cent, with varying absolute values, suffices to make a noticeable difference. The Weber-Fechner law also appears to hold within a certain range for extents as estimated by arm movements.

The sense of *hearing* offers a variegated picture. Testing of the *intensities* of tones and noises is rendered difficult by the lack of a sure physical measure; yet with tones of medium pitch and of medium intensity a relative liminal constancy appears to obtain, that at best amounts to 12 per cent. A still larger limen, which is, however, fairly constant, has been calculated for noise intensities (about 33 per cent).

Pitches on the contrary may be measured precisely, by the wave frequency (per second) of the sounding body. The limiting thresholds are located at 20 vibrations and at from 20,000 to 40,000 vibrations; beyond these limits the lowest or highest tones have no audible effect. Investigations of the *difference limen* showed no trace of the Weber-Fechner principle; on the contrary, within a broad middle tonal range there was constancy of *absolute* difference sensitivity. In the range from 100 to 1000 vibrations, that is, for more than three octaves, a *difference* of $\frac{1}{4}$ vibration is sufficient to produce the impression of increase for highly trained subjects. Thus the tone given by 100.25 vibrations was distinguished from that of 100 vibrations, and one of 500.25 from 500.

These figures show that auditory sensitivity for pitch can achieve an extraordinary fineness. Within the interval of a half tone at the middle of the musical range (e.g., from e¹ to e¹, 300–320 d.v.) 80 different degrees of pitch could be discriminated with training! On this basis the octave below middle C would contain 5000, the whole musical scale 50,000 distinguishable tones!

Out of this immeasurable store music has seized upon but a scanty selection, this being dictated, to be sure, not by difference sensitivity but by the simple relations of consonance and dissonance. Yet a remarkable result is that for these true *musical* relations the Weber-Fechner measurement principle still holds. When a melody is transposed, say, to a higher octave, it remains the "same" melody, and all intervals remain the "same" intervals. In the first place the fifth c¹/g¹ is produced by the frequencies 256/384; the fifth c²/g² by the frequencies 512 and 768. The physical interval in the second case is thus twice as large (256 vibrations) as in the first (128 vibrations). But the *relation* remains equal, being in both cases 2 : 3, and to it there corresponds the impression of psychologically equal intervals; fifth=fifth. This, then, is a form of stimulation for which supraliminal intervals and liminal differences do not follow the same law.

c. *Attempted explanations.* Oppressed by such a variety of findings, one must conclude that it is a fruitless undertaking to attempt to explain the Weber-Fechner principle by a single general hypothesis. The attempt to do this has often been repeated; the three chief hypotheses may be indicated by appropriate adjectives, in order to aid us in occupying new ground.

Four factors participate in the total process; a physical (stimulus), a physiological (neural process), a psychological (perception), and a personal (reaction of the individual to the world).

The *psychophysical* explanation (advanced by Fechner alone) lumps together the physical and physiological processes as the material world and opposes them to the psychological processes, the "sensations." While all previously known natural laws pertained either to the material world alone (e.g., the law of gravitation) or to mind alone (e.g., the law of association), Fechner thought that he had

discovered a far more comprehensive law, which established the generic relation between *both* aspects of the world, and which could be clothed in a mathematical formula. The metaphysical boldness of this conception is worthy of admiration—but its empirical basis is far too narrow and uncertain. Fechner himself believed it possible to minimize the discrepancies of the law and to explain them with auxiliary assumptions. We now know that the principle that he set up does not hold in anything like an exact sense, and that even as an approximation it holds only for certain more or less narrowly restricted regions.

The *physiological* explanation (G. E. Müller, Ebbinghaus, and others)¹ regards the true correlative items under the law as *stimulus* and *neural process*, not stimulus and sensation. According to this conception the effect of the physical stimulus on the physiological excitation is not a parallel course in which every increase of stimulus corresponds to an increase in excitation (as Fechner had supposed); instead, mechanisms of inertia and inhibition develop in the nerves that are operative, so that a state of bodily excitation of a high degree opposes stronger resistance to further increase of stimulation than does a lesser degree of excitation. In the one state of the neural process, therefore, it requires a stronger jolt from the new stimulus in order to alter it than in the second case.

The psychological fact of sensation then varies in simple proportionality to the neural process, by the principle of the “parallelistic” hypothesis.

It is entirely credible that processes of this kind operate physiologically; indeed reactions have been observed in organisms for which perceptual experience is not to be assumed (plants, decerebrate animals) that indicate increasing inhibition as amount of stimulus increases. But human perception is far too complicated to permit this one factor to carry the sole explanation. Also it is incomprehensible why it should be effective in one limited quarter. Moreover, it remains unexplained why the increase of inhibition should be proportional to the stimulus size as the Weber-Fechner law demands. Finally the parallelism of elements that is set up between sensations and neural excitations is now recognized on all sides to be an unusable auxiliary hypothesis.

The *psychological* explanation (Wundt) regards the law simply as a special case of a general “principle of relativity” of conscious states. The law is based not upon sensations as we “have” them in and of themselves, but upon sensations in so far as we “compare” them. Our consciousness has but a *relative* measure of the intensity of the

¹This theory is restricted to those phenomena which concern liminal differences of intensity. It is not applicable to qualities nor to supraliminal differences.

states present in it, and every individual item is therefore apperceived only in relation to others. Thus sensations themselves may increase and decrease in exact proportion to the stimuli; but our *apprehension of these sensations* is only in relative terms.

The fundamental principle of this conception, which as we shall soon show is a warranted one, is unfortunately marred and indeed rendered useless by treating the "sensations" one has but does not apperceive as actual entities with real quantitative values. As a matter of fact, there is at the bottom a relativity; but it is not a question of the relation of individual states of consciousness to one another, but of the relation of all of them to the person in his inner experience. To the three attempts at explanation just described we shall oppose a personalistic interpretation.

3. PERSONALISTIC INTERPRETATION OF THRESHOLD PHENOMENA

The world and its stimuli are contrasted in their infinity to the *finite* person with his limited powers. These powers and possibilities have a meaningful relation to life functions, which are likewise limited, that is, they carve out of the world those part-regions and those inner ranges of the part-regions which are *relevant* to the person. This brings us to a concept of threshold that is far more extensive than was previously considered in this chapter, since it pertains not only to perception and its limitations, but also to all personal limitations. This concept is psychophysically neutral. *Thresholds are the boundaries of the personal significance of the world in so far as such boundaries may be quantitatively determined.*¹

Thus a small lowering of atmospheric pressure not only passes unnoticed but fails to affect the total state of being of the individual; if the pressure diminishes further (e.g., on removal to a higher altitude) the difference begins to have a biological effect, without necessarily becoming noticeable to the mind. In that case it has crossed the threshold of vital, but not of conscious, significance. In order to do that the change must attain a still higher degree.

For a given sense department, then, there are as many *different modes of reaching a threshold* as there are modes of personal significance. These various thresholds are superposed; the threshold of perception represents but *one* of the many kinds of threshold. Indeed, the threshold of perception with which psychophysical investigation deals is of still narrower scope; it is merely the threshold of *observation*, i.e., the boundary of perception that is expressly directed, with full attention, upon the determination of stimulus differences. Perception

¹ Cf. p. 76, and *Die menschliche Persönlichkeit*, pp. 190-222.

without attention, or perception directed toward other ends than stimulus differences, has much higher thresholds, and conversely, a perception upon whose fineness reactions of fatal importance depend (e.g., listening to suspicious noises) shows greater sensitivity than in psychophysical experiments.

To be sure, such a lowering of the threshold cannot be continued indefinitely; adjustment of the threshold *at a given time* to the significance of the activity finally reaches its limit. For example, the increase in weight to a kilogram by the addition of *one* grain of sand, will *always* remain below the threshold of perception; the fineness of olfactory discrimination possessed by dogs can never be attained by human beings. In a case like this the threshold is intimately related to the structure and functional capacity of the sense organ.

This last mentioned limitation might be taken as the true threshold of "sensation" in contradistinction to those of perception, observation, attention, apperception, pleasure or unpleasure, etc.; but it must be understood that we are here dealing with a limiting concept that cannot be determined empirically and is therefore not expressible in quantitative terms. For bare "sensations" can never be demonstrated as conscious contents, and all thresholds that we study by empirical science are subject not only to generic constitutional factors but also to the special factors of personal set for the stimulus and the personal significance of the stimulus situation at the moment. These considerations reveal why very different thresholds were found by different investigators for the same stimulus range. The special experimental conditions are not present merely as more or less serviceable avenues to "sensory" thresholds, but in themselves furnish perspectives of meaning upon which the crossing of the threshold by the stimulus depends.

Whatever else the *constitutional* factors in fixing thresholds may involve, they must be understood in their significance to the person. The human psychophysical constitution, capable of elaborating only a finite number of stimuli and stimulus degrees within the infinity of the world as a whole, is not related accidentally and haphazardly to these particular stimulus ranges, but has achieved the relationship through continual commerce with the world and by constant self-adaptation to it.

Thresholds therefore denote *selection* meaningful to the person. The *outer thresholds* (see p. 172) bound the stimulus area within which discrete personal responses are possible. This is also the stimulus area within which personal life is immediately activated. The adaptation that prevails here is extremely widespread, a fact that becomes especially clear when stimulus areas that evoke responses are compared for human beings and certain animals, and between species of

animals. In each case the range of stimulation that can be sensed by one species is restricted essentially to stimuli having *generic significance* for the life of that species. The scale of pressure stimuli to which a deep sea organism living under enormous water pressure is able to respond is different from that for man, who lives under atmospheric pressure; and whatever organs of vision the deep sea creature possesses are adapted to darkness that is beyond the range of brightness discrimination for man. The converse is also true.

Difference thresholds have dual personal significance. On the one hand their meaning is similar to that of outer thresholds; they signify the *saving and concentrating of energy*. If the countless physical degrees within the response-evoking stimulus area were available for the individual, he would be overwhelmed by an incessant fluctuation of irrelevant differences; it would be impossible for him to concentrate his personal energy upon what was essential and significant for life. But again the threshold furnishes the required selectivity. Only a few of the differences contained by the physical world exist for the individual, for his perception, apprehension, and response; but while the majority are excluded, the necessary energy is available for *utilizing the remainder* (which are most important for life).

The *generic* appropriateness of outer and inner thresholds can under certain conditions turn into inappropriateness; some *particular* functional activity of the person might require a susceptibility for just those stimuli or stimulus differences that are excluded by the thresholds. Such cases are rare with animals since they have a practically constant environment which is adapted in high degree to their systems of response, including their thresholds. It is different with man, whose scope of life and whose developmental tendencies constantly create *novel* situations which are not covered by the constitutionally imposed limitations of susceptibility to stimulation. It is therefore quite comprehensible that man, and man alone, has produced systems of *technique* that in large part amount to an artificial *threshold refinement* of considerable power. This extends the outer limits of perception, makes accessible physical realms that are not sensory stimulus areas, and multiplies the number of perceptible degrees within individual sensory areas.

Even more important is another function of the difference threshold, i.e., that of *creating knowledge*. While suppressing differences and changes, it produces *equality and constancy* of perception. In the objective physical world the equality of two processes or the constancy of a process is a matter of highest improbability; in the personal world of man, however, the meanings of the categories "equality" and "difference" have the same claims to importance; so too those of "constancy" and "change."

The color of the paper I write on would not be a uniform white nor its lines straight if the countless minute differences in brightness and thickness did not remain subliminal. No tone could sound pure, no instrumental harmony would be possible, if all the deviations and fluctuations that are physically present were also audible. That constancy of inner experience which is necessary in order for us to perceive fixed *objects* and permanent *states* as fixed and permanent occurs only because thresholds draw a beneficent veil over the physical instability that affects even apparently stable objects.

The sector of stimulation carved out by the outer thresholds is not homogeneous but structured into central and borderline aspects. The *stimulus center* is not a point, but an area of considerable breadth in which generic adaptation culminates. The stimulus center is correlated with the "personal center," that is, with the quanta of energy operating in the person, that correspond to his normal activities. The stimulus centers of the various stimulus areas represent, as it were, the *physical habitat* of the person; that region with which he is familiar, which he knows in detail, to which he responds appropriately, with delicate shading, and as a matter of course.

Though accessible to the person, the border regions differ considerably from the center in their personal relevance. Compare the intensity of diffuse daylight, which is the most favorable optical condition for the performance of most normal human activities, with direct, glaring sunlight on the one hand, and with twilight far advanced. While one can manage to see here and there, and can even notice rough differences, vastly different expenditures of energy are required, and the gain in knowledge of the finer visible gradations is much less.

Experimental investigations of thresholds showed that on approaching the border regions of the stimulus scale difference thresholds in general become larger; we now observe that this is no inexplicable exception to an inexorable law, but a matter of the personally conditioned structuration of the stimulus scale.

The fact that the validity of the Weber-Fechner principle is always restricted to a *middle range* of stimulation now becomes more comprehensible for the first time. For in the narrow optimal sphere of apprehension, knowledge, enjoyment and action that we called the personal "habitat" it is not absolute stimulus size and stimulus difference that has the greatest significance for the individual, but stimulus wholes to an overwhelming extent. We are not concerned in this region with isolated impressions, and only rarely with mere pairs of impressions, but rather with objects, executed actions, aesthetic structures, i.e., "*Gestalten*." These structured wholes have a fixity that must retain its identity as apprehended even though the absolute intensities

affecting them are changed. If I see a cube under strong illumination at one time and under weak illumination at another, the brightnesses of the individual sides and also the differences in brightness are much smaller in the second case. Nevertheless I can recognize it as the "same" cube because the relative brightness of the sides remains the same. If a crescendo is sounded in a concert hall, progressing from *pianissimo* to *fortissimo*, the impression is scarcely noticeably different when one is sitting in the fourth row or the twentieth; yet to those sitting at the back the absolute intensity of the *fortissimo* is perhaps only as great "in terms of sensation" as a tone of moderate strength to those sitting in the front. The *relative* strength and the number of just noticeable degrees passed through, however, remain the same, as attributes of the identical Gestalt of the crescendo. To a watchmaker who deals with delicate mechanisms, an error in estimation of $\frac{1}{2}$ millimeter would mean disturbance of the entire structure and function of a watch; for a blacksmith or a road worker the order of size within which inequalities would remain unnoticed and insignificant increases in correspondence with the cruder total scope of the work. In all these instances the *relative difference threshold* proves to be of much higher personal significance than the absolute one.

The fact of the difference threshold thus makes perception of constant objectivity doubly possible; first, by suppressing the derangement in small differences, secondly, by maintaining the constancy of relations independently of a changing absolute amount.

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PART THREE

MEMORY

FOREWORD TO PART THREE

In the psychology of the 18th and 19th centuries the term "memory" referred merely to a person's ability to actualize previous impressions as images and ideas. This concept is far too narrow, for it is not suited to the specifically *personal* significance of memory.

Our definition is: *Memory is the conditioning of experience by the past.* This is subordinate to the still wider concept "mneme," which signifies the conditioning by the past of *all* life. Only in so far as "mneme" pertains to *mental* life are we concerned with "memory."

Within memory there are different stages. The past may influence the mind without producing separate items of consciousness; as in the "bound" memory phenomena of exercise, recognition, and utilization. It is only on the highest developmental levels that there is "free" memorial activity; the past is precipitated in the form of appropriate mental representations that acquire diverse personal significance as items of knowledge and remembrance.

Memory operates in the three modalities of life. While the most primitive processes have an essentially biological attachment, memory attains on a higher level an increasingly "super-biological"—that is, an objective and introceptive—significance.

CHAPTER X

MNEME

I. MNEMIC PHENOMENA IN GENERAL

Dependence upon the past ("mneme") is a fundamental principle of all organic life.¹ The principle may be expressed in two ways accordingly as the point of departure is the present or the past. (1) Whatever occurs in the organism in the present is under the influence of former states and activity. It is "historically conditioned." (2) Whatever existed or took place in the organism in the *past* need not be abolished along with the past, but may continue to operate in a whole succession of "presents."

This state of affairs is universal. In particular that "historical conditioning" of all that lives is not limited to mental activity, for the most primitive modes of manifestation belong to the biological and physiological sphere, far removed from any awareness.

The constitution of a plant at a given moment, its present capacity for resisting climatic changes, etc. is determined by all the influences that were exercised over it in previous stages of development by fertilizer, sunlight, moisture, etc. Even those influencing factors that lie in the remote past and diverge widely from present environmental conditions are thus reflected in the fitness and vigor of the vegetative functions at the present moment.

The training that an animal received in its earliest years may appear, after its liberation, to have been entirely lost; but if the animal is re-captured and trained over again it will reacquire its former proficiency more quickly and with less difficulty.

Mneme is not even limited to single individuals; there is a "racial mneme," or *heredity*; for whatever inherited tendencies may have been contributed to the developing individual by the parents during the processes of procreation and generation become operative only at a later time, in post-natal life.²

¹ This conception was first formulated in a comprehensive way by Ewald Hering. The expression "mneme" was introduced by Semon.

² We shall have no further occasion to discuss the "racial mneme;" our discussion is limited to those mnemonic processes that have their rise *within the individual's life*. (For the personalistic theory of heredity see *Die menschliche Persönlichkeit*, p. 104.)

Human life is everywhere permeated by the operations of mneme. The expressions "adaptation," "habituation," "exercise," "inurement," designate mnemonic effects in various guises.

Let us suppose that an individual has been exposed for a lengthy period to the influence of a definite milieu: An adventurer who has lived twenty years in tropical regions among primitive tribes returns for good to his home country in the temperate zone. The past situation inevitably remains effective, not only in his manner of thinking and feeling, in features of his character and nature, but in the functioning and condition of his body, the processes of nutrition and assimilation, his gait and bearing, and likewise in his modes of behavior that are at once physical and psychical: his manners, expression, speech, skills. In other words, mneme is neither a purely physiological nor a purely psychological property, but a *personal* feature.

All mnemonic activity occurs in two causally connected phases. The primary phase furnishes the "*mnemic stimulus*"; in the secondary phase the "*mnemic effect*" results.

The primary phase may consist either of some protracted state (as in the above example of the *milieu*) or single dynamic event. *Impressions* to which one is susceptible, as well as *actions* that one carries out, are able to start a mnemonic process.

The secondary phase has the same alternatives. Mnemic effects may be manifested both in the lasting appearance of the person and in actual items of knowledge and skill.

In a given mnemonic process the connection between the primary and the secondary phase may occur only once or several times. A single meeting with a certain person may suffice as a mnemonic stimulus; I shall hold him in remembrance for a long time. But there are other impressions and activities that develop a manifest mnemonic effect only after many repetitions of the stimulus, as in all cases of habituation, memorizing and physical exercise. In reality such a repetitive process consists in a continual reestablishing of the connection between the primary and the secondary phase. The first appearance of an event that is repeated serves only as mnemonic stimulus; but beginning with its second appearance it has a double aspect: it is already subject to the after-effects of the previous appearance, while in its own right it augments the effect of further repetitions, and so contributes to the mnemonic end-result.

This process is often designated as the "summation of stimuli." This expression, however, is inept. For if it were simply a question of a "sum" of single operations, each repetition would add the *same* increment to the mnemonic effect as every other; the first three repetitions, as it were, in learning a poem by heart or in practicing a skill, would have the same effect as the fourth to sixth repetition or the

seventh to ninth repetition. But this supposition is incorrect, as every day experience and more exact experimentation demonstrate. The mnemonic efficacy of a member in a series of repetitions does not depend upon its isolated strength, but upon its position in the series. And in general the efficacy of repeated mnemonic stimuli decreases inversely with the number of repetitions. The increment from the twentieth repetition is less than that from the tenth. If the number of repetitions is indefinitely continued there is after a point no appreciable increase in general efficacy, and in some circumstances there may even be a diminution.

The great biological and personal importance of this law of repetition is made clear by the following consideration. The variety of functions that the person must perform makes impossible the devotion of all the energy at his disposal to *one* activity through the same channel and for any length of time. A tension obtains between the distribution of energy as a whole and the demands made upon the person by the constant repetition of a single stimulus. The decrease in efficacy of repetition with an increasing number of repetitions is therefore a kind of mechanism of self-defense on the part of the individual against the exclusive preëmption of available energy.

If we inquire into the *meaning* of mneme in the life of the individual, we find that it has a dual significance. It is conservative and progressive at the same time, for *its function is the conservation of progress*. The secondary phase of mneme is preservational; through it the persistence of knowledge, skills and activities is guaranteed for the present and the future, that were acquired in the past. But the possessions that are assured by mneme had first to be *acquired*; it is the function of the primary phase to procure acquisition. It is mnemonic susceptibility that makes it possible for the individual to apprehend novelty and to respond to changes in the environment. Consequently mneme occupies the middle ground between instinct, which is of a generally conservative nature, and intelligence, which is progressively directed.

This Janus-like aspect of mneme will prove to be of significance elsewhere. Here only one consequence may be pointed to concerning the degree of similarity between the primary and secondary phases. Were both phases exactly alike, the preservative character of mneme would be unvarying. But this identity between the initial impression and its recapitulation can never exist since the two occupy different positions in the constantly changing personal course of life. The difference may have various degrees extending from a pole where "mnemonic homogeneity" prevails to a pole where "mnemonic heterogeneity" is considerable.

An example from mneme on the somatic level: Practice in a definite accomplishment (e.g., skating, typewriting, playing football) operates first of all in continually improving that *particular* performance; it is an *homogeneous effect*. At the same time, however, bodily agility and skill, or manual dexterity in general, and hence competence in other kinds of performance, become increased: this is *heterogeneous effect*.

An example for memory, on the psychical level: Perceptions that I have had during a journey later return as appropriate memory images (*homogeneous effect*). But such travel impressions may be retained in other ways as well, as when I accept what I hear and read about the region visited with a quite different understanding than before (*heterogeneous effect*).¹

The relation between the primary and secondary phases is heterogeneous to the greatest extent when the mnemonic *start* is wholly discharged into the unconscious while the mnemonic *effect* is manifested in the conscious form of memory.

When during a severe illness, anyone has passed through the condition of complete lapse of consciousness, later states of consciousness may be influenced thereby. Nothing is recalled; nevertheless the past illness continues to operate in states of anxiety, in aversions, in resentments, the meaning of which remains entirely obscure. The literature of psychiatry and especially of psychoanalysis contains numerous examples of this subsequent translation of non-mental causes into mental after-effects.

As our examples show, the heterogeneity of the mnemonic process is characterized by *irradiation* and generalization of the effect; functions and areas having no share in the original mnemonic stimulus later become involved in the effect. Under the name of *transfer* of learning and practicing this phenomenon has become the object of vigorous controversies in psychology, as we shall see below.² Here we may anticipate this single statement: the reality of this irradiating mnemonic effect is so well established that only the explanation and not the phenomenon, is a matter for dispute.

Under the *temporal* aspect, "immediate" and "mediate" operations of mneme may be distinguished. In the former the secondary phase grows out of the primary phase without any intermediate member; in the latter there is a temporal interruption that is taken up with events and activities of a quite different sort, i.e., a "latent period."

In his ability to span latent periods the individual clearly proves to be *unitas multiplex*. The kaleidoscopic variety of his life-processes and experiences occasions the rapid succession of each by another, and

¹ The distinction is also important for typology; there are people with chiefly "preservative" memories and others with chiefly "elaborative" memories. (Jonas Cohn, Erich Stern-Aachen, Rombach.)

² See Chap. XXVII, I, 3.

since the life situations are also continually changing, the opportunity for re-actualizing a previous event may first occur quite late. That such a revival is *possible* even after lengthy interruptions is an impressive indication of the personal *unitas*, constituting as it does the uninterrupted background for unfolding events and their after-effects. The latent period, which is capable of being spanned by mnemonic phenomena ("mnemonic span"), may in some respects be only a little shorter than an individual's whole lifetime; impressions of earliest childhood rise to the surface in old age with unexpected vitality.

II. THEORETICAL ASPECTS OF MNEMIC PHENOMENA

Theoretical considerations can be derived from no better starting point than the fact of latency. Since that which belongs to the latent period is inaccessible to direct experience of any sort, some hypothesis is at once needed. At the outset mechanistic and personalistic formulations are clearly distinct.

Common to all theories is the admission of a *connection* between the primary and secondary phases across the latent period. There must be a bridge leading from the one phase to the other; it is required by the mechanist since he is not able to conceive of delayed action involving two elements in the absence of a connective medium; it is required by the personalist because for him the permanent unity of the personal life furnishes the common background against which the two phases of the mnemonic process become salient. But they disagree with respect to *how* the gap is closed.

The solution that first suggests itself is the assumption that the mnemonic start is *constant in content* up to the instant it is revived in the secondary process. This explanation ascribes a kind of *inertia* to the primary process. The "trace" or "residue" that it leaves behind leads, to be sure, a hidden but essentially unaltered existence, and may therefore bring about the revival of the earlier event as soon as the occasion is given. These "traces" may be regarded as being both bodily and mental in quality. Physiologists use the term "established nerve pathways"; biologists speak of material "engrams" (Semon). Within psychology proper we come across the same conception in the conclusion that former impressions persist as unconscious "images" or "ideas" until they are reinstated.

Now such perseveration of *content* doubtless occurs in mind and body, but it represents only the more external—and less important—workings of mneme. It is possible only with life processes that are extremely isolated, "petrified" as it were; and such crystallization and persistence are demonstrable only through their meagre attachment to the total personality.

But the overwhelming majority of mnemonic operations are of another type. We mentioned previously that a portion of "mnemonic heterogeneity" is to be found in every mnemonic process. These metamorphoses, phenomena of transfer, etc. cannot be brought under the principle of inertia that would require identity of primary and secondary phases. Nor can they be ascribed to a hidden activity that the "residues" achieve on their own account; this mysterious performance is utterly irreconcilable with any elementaristic principle—the more so, since these alterations are evidently related to the needs and developments of the person in whom they take place.

This leads us to the *personalistic* conception. According to it mnemonic stimuli do not preserve their identity as entities having fixed content; rather through apprehension by the susceptibility of the whole person do they become immersed in the total state of being of the person and influence his *dispositional* constitution. As long as the latent period continues, the afterplay of the mnemonic stimuli is to be described as "dispositions" in this sense only. And if they later become actualized by the secondary process, they are no longer "the same" contents or processes as before, but salient moments in the *present* person, saturated with the life and the transformations that the person has experienced in the mean time.

The personalistic concept of "disposition" is much more moderate, and at the same time much better adjusted to the facts to be explained, than the mechanistic concept of "trace," even though the latter may be more graphic. Dispositions are *latent by nature*, for they signify simply possibility, readiness, directedness; and additional agencies are needed to release them in order to effect their transformation from potentiality to actuality. Moreover mnemonic dispositions are embedded factors of the total dispositional organization of the person, and consequently this concept of mnemonic disposition preserves a connection with the personal whole.

This "total reference" must be taken quite seriously for both phases of the mnemonic process. Whether any event in the *primary phase* transcends the "mnemonic threshold," i.e., develops into a mnemonic stimulus, does not depend alone on the insistence of this isolated item or on the number of repetitions, but is determined to a high degree by the general state of mnemonic susceptibility. This dispositional quality can occur in both a permanent and a transitory form. Every person has the peculiar property of being lastingly impressed by external and internal events; this personal factor influences not only the intensity and persistence of mnemonic stimuli, but also—what is more important—their *selection*. It would be hopeless to attempt to derive the unconscious choice of mneme predominantly from qualities of the items chosen; it is the deeper strata of the person, in which

emotion and striving are rooted, that mark out certain life patterns with a mnemonic accent while others remain neglected.

This permanent condition of selectivity is augmented by others which have a transitory character. A brief burst of passion, a specialized development of interest, may furnish this or that impression with a mnemonic impact completely lacking in other personal situations.

The same proves true of the *second phase*: the re-actualization of a mnemonic effect is the work of the whole person. His emotional condition in the present, his hopes, fears, and expectations directed toward the future, determine the appearance in which events of the past are revived or are prevented from reviving (so called "repres-*sion*").

From this multiplicity of determinants it becomes understandable that mnemonic threshold and mnemonic selection may appear quite irrational and unpredictable.

It is often astonishing that in a child an event of catastrophic proportions leaves behind no recognizable after-effects, however violent the child's reaction may have been at the instant of the experience; conversely an objectively trivial occurrence, that is insignificant in its primary effect, may become operative only after a lengthy latent period.

III. MNEME IN ANIMALS

We stated above (p. 191) that mneme occupies a middle ground between instinct and intelligence. This leads to the problem of developmental psychology concerning the mnemonic capacities of animals. Instinct in the life of animals is as definitely fixed as their intelligence in carrying on their life activities is meagre. The position of the intermediary between the two is, however, not immediately obvious. As a matter of fact, it turns out that we cannot speak of "the" mneme in animals in general. That is to say, the participation of mnemonic processes in the life of animals is extremely varied in different kinds of animals and in different individual animals; and precisely on account of this variety it becomes an index of the degree of development.

The life of lower animals is dominated almost exclusively by the racial mneme; a change of habits, an increase or alteration of definite accomplishments through mnemonic operations in the individual, is possible only to a meagre extent if at all; the individual animal possesses very little "plasticity." (Even frequent repetitions remain without mnemonic effect. A fly may strike against the transparent window pane a hundred times, but it never "learns" that it is up against an unconquerable obstacle.)

The simplest forms of individual mneme in animals make their appearance as *changes of habit*. If biologically relevant changes occur

in the animal's environment the incessant influence of the new stimuli (e.g., altered food-supply) brings about a change in the animal's behavior that proceeds in minimal steps and finally becomes fixed. To be sure, the possible variations of this kind in the life of the individual are usually slight in contrast with the permanence of modes of behavior established by inheritance.

The next step in development leads to mnemonic discrimination of certain features of the environment, and thus to the differentiation of behavior between the *familiar* and the *unfamiliar*. On this level the animal is well oriented with respect to the territory in which it resides, "knows" its home (its kennel, nest, etc.), is bound to a particular mate, and distinguishes its own offspring from other young animals of the same species.

Still higher mnemonic accomplishments are required of those animals that can be tamed or trained. The two processes are by no means the same thing. Taming signifies a total alteration of the animal's nature, while training means the imparting of sharply circumscribed particular accomplishments.

Taming implies above all a certain flexibility of the instinctive pattern; only on this basis can animals become habituated to modes of behavior foreign to them in the state of freedom. Many animals possess this flexibility only during a brief period of youth where a slight degree of taming is possible. After the complete maturing of instinct, however, the dynamics of the racial mneme break through, and the new mnemonic acquisitions of the individual's period of youth prove to be quite superficial and unstable; the animal reverts to "wildness." A further prerequisite of taming is the presence of the important ability to become habituated and to cast off habit with respect to environmental persons and things. A dog's or horse's relationship of familiarity with its master, its home, its abode, are mnemically conditioned. There are many examples of the durability of this relationship. On the other hand, with a change of master or of home a complete recasting of the relations to environment may also take place; the new impressions and activities acquire familiarity and obviousness through repetition and push the old mnemonic determinations into the background.

Two forms of *training* must be distinguished; practical and experimental. *Practical* training is undertaken by the professional animal trainer or by the lover of pets who teaches his dog various tricks. The proficiencies that the animal acquires belong outside his proper biosphere; this is involved only indirectly, as for instance through the close connection of the animal with the person of the trainer, or through the reward and punishment following performance. Both groups of motives suffice to give a certain point to even the most

unnatural performances that are in themselves meaningless to the animal, and consequently to give the constant repetitions a heightened biological resonance. The part played by the personal factor must not be underestimated; between the master and the animal in training there obtains a feeling-atmosphere of a very characteristic sort; if it is lacking even the most exact duplication of the training procedure by a stranger may remain utterly ineffectual.

In contrast to this feature, the personal influence is completely excluded from *experimental training* for psychological purposes, and the more or less *mechanical influence of repetition* is made the sole medium of training.

The simplest experiment has something like the following arrangement: Three containers that look alike stand side by side; the one at the right unknown to the animal contains food, while the others are empty. At each trial this arrangement is repeated. In the beginning the animal, seeking food, will go by chance now to the right, now to the middle, now to the left; it gradually *learns* to go directly to the right container. Exact recording is made of the number of trials required for perfect learning of the "right" direction. If the container with the food is now shifted to the left, the animal must "relearn," i.e. lose the response that has just been laboriously learned; the required number of repetitions is again exactly determined. The experiment may be varied at will, by increasing the number of containers, by training for other features than "right" or "left," e.g., for color, shape, size of the containers, by introducing obstacles by alteration of the stimulus pattern.

Experimental mazes are much in vogue; these mazes have alternative pathways, blind alleys, electric grids etc.; in order to escape from them or to reach the food that is placed somewhere in them, the animal must learn to integrate its movements into a definite sequence (e.g., always to take the left turn where the path divides).

In regard to the methods and results of such experiments a few general principles may be mentioned. Their object is the attainment of some end by means not already established on the biological level. Unless, therefore, the mnemonic process is attached to vital activity, and is sustained by a genuine need, it will fail to operate. It is solely the strength of the need that impels the animal to keep repeating its attempt to reach the goal, and thereby to adopt various paths that are unfamiliar at first and whose relation to the goal is not evident to it. At first the choice of ways and means is wholly indifferent; there are a few accidentally successful trials among many incorrect performances. But gradually the animal begins to discriminate the correct path that leads to the satisfaction of its need. From the sequence of need, path, and satisfaction a structural linkage is formed that is far more stable than any association of random movements

by which activity is dissipated. The linkage, with constant repetition, finally becomes a fixed pattern of behavior (Gestalt) that is run off automatically whenever the situation of stimulus and need is presented.

This somewhat simplified explanation traces the outlines of this primitive learning process. It is a kind of learning that is closely akin to the process of "habituation," in contrast with higher processes of learning, which are very different. This statement is important because at one time the purely automatic repetitive training in such experiments was regarded as the fundamental type of learning, animal and human alike. This is unquestionably erroneous. That is demonstrated by the fact of practical training with its strong personal bond. But it is still more significant that with higher animals the natural processes of learning that occur assume a different pattern through *insight* into the relationships to be acquired, and that the activity of human learning occurs as genuine acts of intelligence and will under infinitely varied psychological conditions. The mnemonic effects of repetition enter into these higher processes of learning simply as contributing factors; they furnish, as it were, the raw material with which the thought and volitions of the person who is learning work.

Nevertheless something remains to be said of the utility of psychological training methods in making exact *comparative* determinations. Quantitative and qualitative results may be obtained in experimental training directly from the number of repetitions needed for establishing a definite mnemonic effect and from the relation between trials and errors. Different kinds of animals and different individual animals may thus be compared with one another as to their learning capacity for tasks having a definite degree of difficulty. Moreover, by varying the tasks, the upper limit of learning in general for particular animals, and the influence of definite contributing conditions on learning capacity, may be investigated.

Again we encounter the dependence of this capacity upon vital needs. The more "unnatural," that is, the more contradictory to the innate modes of the animal's behavior, the path that the animal must learn in order to gratify its needs, the more difficult is the learning process. Under some circumstances even the most intense need is not adequate to enable the animal to acquire a proficiency diverging too sharply from the animal's inborn pattern of actions.

The housefly mentioned above that continues to strike against the closed window in vain may happen accidentally to find freedom through a nearby open window, once or even more than once. Nevertheless this animal never learns to seek the indirect path; rather will it perish through its fruitless repetitions of the attempt to take the direct path.

A well-nigh universal principle of animal behavior is here effective: gratification of the need is sought by making the most direct approach possible to the object of the need. The capacity to dispense with this principle and learn the *Umweg* (indirect path) is a striking indication of the level of development of the animal. A chicken that can get grain lying before a cage only by way of an opening to be discovered in the back wall of the cage never learns this *Umweg* because it would have to go away from the goal temporarily in doing so. But a dog on the contrary finds the *Umweg* after a few repetitions and continues to make use of it.¹

¹ For some higher forms of animal learning see pp. 319 ff.

CHAPTER XI

PRIMITIVE FORMS OF MEMORY

I. IMMEDIATE MEMORY

I. TIME FRINGE AND EIDETIC IMAGES

Immediate memory is the persistence of an experience in the mind after the cessation of the external stimulus. Here the phenomenon of memory is closest to the phenomenon of perception; sometimes one is uncertain whether one is experiencing the present effect of a sensory stimulus or its after-effects, be these central or in the sense organs ("after-images").

Whenever I reach this topic in my lectures I am accustomed to say: "I am going to pause at the end of the sentence I am now saying to enable you to observe the phenomenon of immediate memory." A brief silence follows which allows the auditors time to let the words last heard and their meaning play undisturbed in consciousness. They then find the impression, which, although it is "past" by that time, continues to develop its form, to be much more active than other past experiences that are separated by an interval. A similar experiment may be made with a picture, after looking at which the eyes are closed; it persists for a lengthy period "before the inner eye" so as to occasion doubt whether it is still being "seen" or only "imagined." It is well known that the strokes of a clock that has not been attended to during the striking may be counted immediately afterward by memory, and the whole succession of strokes up to twelve may be repeated in consciousness with a vividness of a curiously sensory sort.

The phenomenon also takes place when it is not, as in the above examples, an object of deliberate observation. Every primary experience that is given the opportunity of full development has this "*time fringe*."

The significance to the person of immediate memory consists above all of the fact that it makes possible the firmer establishment in the mind of any experience. Through this protractedness any new mental content is absorbed by the mneme and is made ready to operate in the distant future.

If a person, while traveling in foreign countries, gives each impression sufficient time to "set" as a primary after-effect, it is highly probable that

he will retain lasting possession of it in his mind. The chance of this is greatly lessened if the impressions succeed one another with kaleidoscopic swiftness, however vivid each experience may be in itself.

Therefore wherever it is a matter of adding intentionally to the stock of memory, use should be made of immediate memory. Whoever is learning anything new should take care that on first receiving the new content, perception be allowed to run its full course. If the new items are admitted in too rapid succession (as with lists of words in memorizing, rules, etc.) the separate impressions cannot be established in immediate memory and are thus prevented from exerting after-effects in mediate memory. Cinema films used for educational purposes are often very poorly adjusted to this psychological consideration since the particular phases follow each other with breathless speed.

The phenomenon of immediate memory must also be regarded from the genetic point of view; here we must refer once more to sense-perception. Not only is the *present* to which every perception refers extended, but its boundaries are flexible. To every momentary experience belongs the capacity to linger; within the "time fringe" the past likewise extends into the present. In an original experience of this sort the contents of perception and of memory are not yet sharply differentiated; what is represented in it is rather the common basis for the gradual separation of present-reference and past-reference, or in other words, of sense impression and memory image. This developmental conception, like the theory of gradations that we shall discuss, is connected with the doctrine of E. Jaensch of Marburg.

In the attempt to fix scientifically the flexible transition between perceptions and memory images, intermediate stages were distinguished. The first of these stages has long been familiar; it is the *after-image*.¹ The term "after-image," though derived from the field of vision, is nevertheless applied to the immediate after-effects of all sensory content in so far as this is determined by continued excitation of the stimulated sense organ itself. After-images are thus *sensory* phenomena just as are perceptions, but they last only a very short time after the withdrawal of the external stimulus.

The "*eidetic image*," as Jaensch called it, forms the second intermediate stage. This is less closely dependent on the original stimulus; the impression is more intimate and more firmly embedded in the person. But it does not attain the pure inwardness nor the faintness and defective distinctness, of the ordinary image. Persons who are able to report upon such eidetic images characterize the experience as one in which the object (which is no longer present) is "seen"; and

¹ See p. 168.

certain regular features of eidetic images and the astonishing amount of detail in the experience show clearly that they are very close to true perceptions. Yet this phenomenon does not normally go so far as to produce hallucinations; the awareness that the object is no longer present in *reality* is seldom lacking.

Thus far the eidetic image is a fact of *general* psychology; it appears within the time fringe that is a general psychological phenomenon. But the tendency to have eidetic imagery varies greatly in strength and range; certain age levels and types of individuality are liable to have especially vivid and persistent eidetic images. In these so-called "eidetic types" the images are not merely transitional formations in immediate memory that rapidly blend and disappear; on the contrary, they achieve independence, are particularly accessible to introspection, and reappear even after long intervals (in "mediate" memory) with undiminished vividness.

Particular eidetic types are distinguished according to resemblance of the eidetic images, as inflexible, uncontrollable, and involuntary infringements upon the person, to after-images ("tetanoid" or T-type for Jaensch), rather than to states embedded in the total person so that he is able to produce, utilize, and alter them according to his interests and inclinations ("Basedow" or B-type).

In the view of Jaensch this difference in types is not restricted to differences in the individual's sphere of eidetic imagery, but has significance in terms of the person as a whole. The two eidetic types are correlated in particular with certain peculiarities of bodily build, facial structure, etc., and also with relationships to the symptoms of tetany and Basedow's disease (whence their names). Since statistics on the frequency of eidetic types have shown considerable local variations, it was suggested that the nature of the geographical locality (especially its supply of calcium) might be a contributing cause. All these considerations are still subject to dispute.

The many-sided *experimental* investigations conducted by members of the Marburg school and others have led to the setting up of five degrees of intensity in the formation of eidetic types. The maximum frequency appears to belong to the period shortly before puberty; many people who were eidetic in their youth later lose this peculiarity.

The position of the eidetic image between perception and imagination was confirmed experimentally by the discovery that eidetic images exhibit many regularities of appearance that otherwise hold only for true perceptions.

The relation of eidetic imagery to intelligence is in dispute. While many investigators are convinced that the eidetic disposition is more frequent among the less intelligent, thorough research by Bonte appar-

ently shows that this disposition is independent of the degree of intelligence.¹

2. THE CAPACITY FOR IMMEDIATE RECALL

There are voluntary activities for the execution of which immediate memory *alone* suffices. These are performances of immediate recall.² A child who is sent by his mother on an errand to the kitchen is able to carry out the instruction only because he remains under the influence of the mother's words which he has just heard. Everyone who makes telephone calls knows that during the various manipulations involved in dialing the number, the desired number is present visually and acoustically with especial vividness, even though it may not need to be repeated verbally.

The range of this capacity may be measured by presenting series of certain kinds that vary in length (rows of figures, sentences) and having them repeated immediately. The performance depends upon *two* capacities whose proportionate effect is not distinguishable: the span of attention that makes possible the apprehension of a series as a whole, and immediate memory, which contrives to hold the entire series for the next few moments. The capacity for immediate recall shows marked improvement with increase in age, and varies considerably from person to person; unusually low achievement may be the symptom of mental deficiency.

As the *length* of the series attended to increases, the difficulty of attending mounts disproportionately. In lecturing I usually illustrate this law by a simple group experiment. I recite digits at half-second intervals in a *monotonous* voice and request the writing down of what is retained, as follows:

6, 9, 2, 8, 3, 7. (Write!) . . .
9, 4, 1, 3, 8, 5, 7, 2. (Write!) . . .
3, 0, 9, 4, 6, 1, 7, 8, 2, 5. (Write!)

While all the auditors write the six-digit series correctly at once, they indicate by motions of astonishment and vexation the disproportionate increase in difficulty of the eight-digit series with the addition of only two digits; only a handful of the subjects are capable of reproducing it correctly. The ten-digit series all but occasions rebellion and produces a widespread refusal to continue. The introduction of a series less than twice as long is experienced as a totally different kind of task from the simple six-digit series. In the task with ten items we do not have retention of a partial series of six items as in the first

¹ E. Jaensch has recently sought to develop the theory of eidetic types into a comprehensive *characterological typology*, which we shall describe in Chapter XXIII.

² In German, *Merkfähigkeit*.

task, leaving only the four extra items beyond the capacity for recall; the number of items attended to is actually less than in the first experiment.

In the language of associationistic psychology this is "retroactive inhibition"; the association established between the first items on hearing them once is disturbed by the digits that follow. In reality, however, the process is not brought about by the "elements," but by the energy available for attending to the whole. This is narrowly limited; with lengthy series smaller and disproportionate quanta of it are all that can be devoted to the separate items and their connections; hence the lessened total result.

A factor that favorably influences the capacity for recall is the addition of *rhythm* to the material. In the class demonstration mentioned above I follow the three series of digits, which are monotonously recited, with a fourth which has a marked three-part rhythm:

5, 8, 1—4, 0, 2—3, 8, 7—5

The result is always surprising, especially if the other unfortunate ten-digit series has just preceded; for the rhythmical ten-digit series is correctly reproduced with ease by nearly all.¹ In this test the subject was compelled to grasp each group of three figures as a rhythmical Gestalt and again to combine these part-wholes into a total rhythm of the series; this structuration facilitated the mnemonic effect.

Another favoring factor is *meaning*. The above examples involved disconnected items. But if the material forms a meaningful whole (e.g., a connected sentence, an instruction, etc.), and if this meaning is *understood*, attending is made considerably easier, and material of a quite different order of length can now be mastered on hearing it once.

It is of great theoretical interest, as a phenomenon of "mnemic heterogeneity," that in such a process of attending the *meaning* may *detach* itself from the proper wording and be reproduced in entirely different words, without any suspicion of the substitution on the part of the person who makes it.

(1) Mr. X gives the following order to his servant: "Go to Mr. Y and tell him: I do not feel well and regret on this account that I shall be unable to take part in the conference." The servant delivers this message to Mr. Y: "Mr. X is very sorry; he cannot come to the meeting because he is sick." The messenger has not retained a *single word* of his orders; a different expression has been substituted for every term, and even the sequence of the items has been altered;—yet the messenger has demonstrated a good capacity for recall because he correctly reproduced the meaning.

¹ The easier memorization of verse as contrasted with prose texts of the same length is partly determined by the factor of rhythm.

(2) The French philologist Ronjat has a German wife. Their son grew up bilingual from the start, his father always speaking to him in French and his mother and nursemaid in German. At two and a half years he was once sent by his father from the room, which was too cold, to the nursemaid, with the explanation *ne reste pas ici, il fait trop froid.* ("Don't stay here, it is too cold.") The boy ran to the maid and complained *Papa's Zimmer ist zu kalt* ("Papa's room is too cold.") He had translated none of the words he had heard; on the contrary, the words as such had not been attended to or noticed at all. The *meaning*, which was alone retained, quite automatically found expression suitable for the other interlocutor.

Such phenomena conclusively disprove the "trace" theory of the mnemonic process. No "traces" whatever of the words heard are left behind in the form of corresponding word-images that may be recovered; nevertheless there is a vigorous and appropriate total activity of mneme.

3. PERSEVERATION

Perseveration occupies a position between the phenomena of immediate and those of mediate memory. It is a state of short duration, but it lasts much longer than the simple time fringe.

In instances of it the action of the mnemonic stimulus persists in the background without claiming the full coöperation of consciousness, as a *disposition* wholly prepared to become actualized upon the cessation of other intervening events. Thus, e.g., the mnemonic stimulus may persevere solely as a *motor* impulse to repetition and express itself in stereotyped forms of speech. Or it may continue to act by coloring feeling and emotion so that the ideational content belonging to them may be facilitated in reproduction.

(1) One morning I read in the newspaper of a performance of the *Fledermaus*. In connection with it the melody of the *Fledermaus* waltz came into my head consciously for an instant. I then proceeded with my work, which claimed my entire attention. An hour afterwards, I discovered to my own astonishment that I was still obsessed by the waltz tune; and I had the feeling that I had never entirely lost it during the interval of time, and that perhaps I had even been humming it all the while.

(2) Someone has received important news which has become fixed in the time fringe. Now the person is compelled to apply himself to routine tasks that for the time being require his whole attention, so that the news is not present during this period as a conscious content. But at intervals the consciousness of the piece of news reappears with such persistence and vigor that it must have been preserved in the form of subterranean feeling requiring only the slightest distraction from some other quarter in order to revivify its ideational content.

Perseveration has a remarkable significance for all men whose occupation involves perpetual change and overlapping tasks. For instance: a business man at New York orders a telephone call to Chicago for an urgent message. When waiting for the connection he begins to dictate a letter, but a visitor interrupts him. In the midst of the conversation with the visitor the telephone rings: and immediately the subject he has to discuss with the man in Chicago is available to his consciousness because it had *perseverated* during the dictation and conversation. After telephoning he can return to the conversation, and as soon as the visitor leaves, continue the interrupted dictation only because these contents have been in a subconscious state of perseveration or readiness to come back into full consciousness.¹

II. BOUND MEMORY

Those "mediate" memorial processes which, after a shorter or longer period of latency again become effective, occur in two principal forms. The simpler and ontogenetically earlier form is that of *bound* memory which is unable to give rise to free and independent memory images. Some new primary activity is necessary to bring about the actualization of an earlier mnemonic stimulus.

I. THE EXPERIENCE OF FAMILIARITY

We have already mentioned the phenomena of habituation originating in repetition. These must now be investigated in regard to their specifically *psychical* aspect.

Any impression that does not fit into an individual's customary surroundings either slips away from him, is considered strange, or elicits astonishment. If the impression is repeated its aspect is changed. What previously escaped attention now begins to be noticed; what seemed strange or surprising at the time gradually becomes *familiar*.

In its first stage familiarization is a psychophysically neutral process whose outward aspect may be designated as "familiar bearing." The individual (including animals) *responds* differently to familiar objects than to stimuli that confront him for the first time. It is even highly questionable in the case of babies and animals, whether these familiar bearings are accompanied by any psychical experience.

But in their more highly developed forms familiar bearings have a manifestly psychical effect, with which we are here alone concerned. This is the *experience of familiarity*. It may be bound up with the totality of the personal milieu, in which case it occurs as the infant's sense of security in the face of his narrow environment, the adult's feeling for home surroundings, as veneration of long familiar

¹ See also the discussion of "interrupted actions" p. 422.

furniture, as the religious observance of popular customs and the usages of cults. Or it may set apart some particular object (person or thing) from all other objects, whether indifferent or strange, as in the child's attachment to its old doll, or joy upon seeing old friends again. A strongly felt reaction toward the *present* object is essential, although a separate idea of the *earlier* impressions by virtue of which the current one is recognized as familiar, is not necessary. Everybody has had the experience of meeting a person who "seemed familiar" without being able to identify him or to recollect the occasion of a previous encounter. The present perception merely seems to be endowed with a different sort of atmosphere than when it occurred for the first time.

Höffding was the first to describe this phenomenon psychologically; according to his view a sense impression receives a new *attribute* from its recurring presence, the "quality of being known."¹ We prefer to emphasize not so much the condition of perception of the object, as the altered position of the subject in contrast to the recurring presence, whence we obtain the terms "familiar bearing" and "experience of familiarity."

The gradual development of this mode of experience in relation to individual objects may be clearly observed in the infant. In what is called the first "recognition" there is properly speaking no question of "cognition." A six-months old child who smiles at the sight of his mother but remains indifferent or aloof toward other faces, does not, for instance, indulge in the reflection "this is the same person whom I saw yesterday and have always seen." For he knows nothing of yesterday and the past, nor is he capable of comparing two impressions. The familiar bearing and atmosphere set in long before a memorial image of the mother begins to develop.

2. "FAUSSE RECONNAISSANCE"

There is a very remarkable *illusion* that occurs in connection with recognition; the experience of familiarity may become set, even when there is no recurring impression, for an initial occurrence. These cases of *illusory familiarity* are usually designated by the French terms "*Fausse reconnaissance*" (=wrong recognition) and "*phénomène du déjà vu*." An English term is "feeling of having been there before." The psychiatric word "*paramnesia*" is mostly confined to plainly pathological processes.

Case-material may be gathered both by questionnaire and by analysis of literary material. Thirty years ago the French physician Bernard Léwy and the Dutch psychologist Georg Heymans sent out questionnaires on *fausse reconnaissance*; the numerous reports collected in

¹ *Bekanntheits-Qualität.*

this manner demonstrated a surprising frequency and variety of the illusion. Since that time little special research has been devoted to this problem.

On the other hand there are in the works of poets and novelists many places that give such a concrete description of this illusion that we may safely infer the author's having experienced it himself. Here is an English sample from a remark of Mr. Micawber to David Copperfield:

"If you had not assured us, my dear Copperfield, on the occasion of that agreeable afternoon we had the happiness of passing with you, that D was your favourite letter," said Mr. Micawber, "I should unquestionably have supposed that A had been so." On hearing these words, Copperfield suddenly experienced the illusory recognition, which he described with an almost scientific exactitude as follows:

"We have all some experience of a feeling, that comes over us occasionally, of what we are saying and doing having been said and done before, in a remote time—of our having been surrounded dim ages ago, by the same faces, objects, and circumstances—of our knowing perfectly what will be said next, as if we suddenly remembered it! I never had this mysterious impression more strongly in my life, than before he uttered those words."

With this literary document two reports may be compared that I obtained from students.

(1) "For about six years I have frequently noticed the peculiar phenomenon of being familiar with what is objectively novel. For me this phenomenon refers chiefly to persons and certain situations, less often to localities and views. For instance, if I meet a person in a strange city a feeling of anxiety suddenly comes over me and I am embarrassed by the thought: 'You know that person; wherever is it that we met?' This feeling lasts from half a minute to ten minutes at most.

"Fausse reconnaissance is for me not the result of excitement; I am usually in a completely tranquil state. I observed the phenomenon for the first time at the age of sixteen. I was then in high school in a small city and had been in it for only about a month. I was sitting in a pupil's chair on the stage of the first form with my back to the rostrum. Three boys sat opposite me. We were talking about the exercises at our promotion. I still recall very clearly that after contributing some detail I suddenly kept still. I had to keep still, and became nervous, for I was worried by the thought: It was all exactly like this before; I have already said it all word for word. This occurrence affected me during the entire conversation (about one hour). I became reserved and constantly had a feeling of insecurity."

(2) ". . . The most remarkable feature of this phenomenon, which is as infrequent as it is perplexing, seems to me to be its almost providential character. You have the feeling of having experienced not only

what is happening, but what is *going to happen*. You *expect* something to happen and immediately afterward your expectation is confirmed. The experience is very brief and usually ends the instant you notice it. The mind is in an unreflective, apprehensive, dreamy state. The phenomenon is most frequently concerned with what is being said in a conversation, with how those present are acting; or with what is being said in a lecture, what one is reading in a book, or with any kind of situation toward which one is wholly indifferent, on the street or on viewing the countryside."

A satisfactory explanation of these phenomena has never been contrived, but one thing, which is brought out by the above recitals, is certain: that the principle *is to be sought in an alteration of the person's feeling-attitude*. It is not at all necessary for the *objective* stimulus situation as such to acquire something that resembles a former stimulus and is now falsely identified with it; on the contrary, the individual feels himself misplaced in a *mental* condition that saturates with the feeling of familiarity whatever may be perceived through the senses. It is only in this light that we can understand the "providential character" mentioned by Copperfield and reporter (2); the individual, having this paradoxical feeling of familiarity mount within him, *expects* that whatever may occur in the next instant will appear to him as already known.

To be sure, this transfer of feeling is not always a smooth one; the pure experience of familiarity which is pleasant in itself, may be displaced by the contrary feeling that something is wrong with this familiarity; then there occur the "insecurity" and feelings of anxiety of which the accounts make mention.

Nothing definite is known about the particular constitutional and dispositional conditions that give rise to the paradoxical feeling of familiarity. It would be indefensible simply to view it as some pathological manifestation, for such instances as those described in our illustrations occur in entirely normal individuals and under normal circumstances. If the manifestations become very frequent and if the illusory character of the recognition is disproved, then, of course it will be necessary to suggest pathological disorientation.¹

Under certain circumstances particularly strong manifestations of the paradoxical feeling of familiarity may even affect one's metaphysical outlook. If the impression of "having already experienced it" is irresistible in spite of the knowledge that one *cannot* have ever

¹ It is a counterpart of that form of disorientation called "alienation," in which familiar situations and persons known intimately suddenly appear unfamiliar and uncanny. Even this paradoxical feeling of unfamiliarity is certainly not always pathological; on the contrary it may attack healthy persons precisely as the paradoxical feeling of familiarity does. A composite investigation of both kinds of illusions of orientation would certainly clear up much that is obscure.

experienced something as oneself, this alternative arises: one must have first experienced it in some other existence! This situation is one of the psychological sources from which the doctrines of pre-existence, transmigration of souls, and reincarnation drew their inspiration.¹

Plato felt at home in the realm of ideas, but since this could not be derived from sensory experience in his mortal existence, he created the myth of "Anamnesis." During a prenatal existence in the purely ideal world the soul takes a first view of the ideas and is enabled to "recollect" them later in earthly life. In Friedrich Nietzsche's doctrine of eternal recurrence, which he advanced during the last period of his creativity, there are expressions that sound word for word like accounts of *fausse reconnaissance*.²

3. THE UTILIZATION OF MEMORY MATERIAL

The after-effects of mnemonic stimuli, remaining active in the background (where they are "bound") find expression not only on the occasion of repetition, but also in connection with processes and contents of a different sort;³ and in such cases the old experiences become *utilized* in new primary processes. Mnemonic stimuli contribute to the formation of the background from which new events arise; they enter into the total patterning and coloring of the new items without necessarily occasioning any reproduction of previous contents of consciousness.

The mnemonic effect consequently does not consist in the production of memory images, but of *attitudes* or *sets* (directional dispositions). It occurs in three principal forms.

a. The accentuation of *feeling* by the primary process persists in quality and force. Thus an experience which upsets emotional balance (a "trauma") may have in its wake a long continued disposition to depression; it sometimes becomes extremely difficult or even impossible to arouse any remembrance of the occasion. (This is called "repression.") Meanwhile the mnemically conditioned feeling-attitude possesses entirely different contents.

b. The *mental* content of the mnemonic stimulus remains active, not, however, as a salient constituent of consciousness, but as a *cultivating* force. For "cultivation" is by no means a sum of isolated cognitions and recollections; rather is it a fabric of dispositional attitudes and tendencies. Whatever the individual experiences and learns in the course of his life generates the disposition to shape new impressions

¹ Ottokar Fischer cites interesting evidence for this.

² See this passage taken from his *Zarathustra*: ". . . This slow spider which creepeth in the moonlight, and this moonlight itself, and thou and I in this gateway whispering together, whispering of eternal things—must we not all have already existed?"

³ See also pp. 191, 192.

into quite definite patterns. One "looks at" a painting with "cultivated" eyes; one takes part in a conversation, understands political events, etc. in terms of a mnemonic store that is a portion of the person.

A person who possesses but little demonstrable "knowledge" (i.e., salient items of recollection) of mediaeval history may nevertheless be considerably advantaged and influenced mentally by what he has previously read, heard, and seen concerning the middle ages. When looking at a Gothic cathedral or reading an old-time mystic he draws from these apparently forgotten sources of cultivation much deeper understanding than another person who perhaps has a great deal more knowledge about the middle ages on tap, but who never allowed it to become embedded in the deeper strata of his personal being.

c. Finally, such utilization of previous experience contributes to the formation of *total personal bearing*. The individual's inner tendencies fashion certain content by means of mneme into interests, practical convictions, "principles," and finally, traits of character. Character has sometimes been called "memory of the will"; primary acts of will must become mnemonic starting points of lasting effectiveness if character is to develop.¹

To summarize: *The significance to the person of bound memory* is above all *genetic*, involving the history of the person; any mental present for the individual is charged with his entire mental past. Moreover, it is not *knowledge* of this past that belongs necessarily to the historical attachment; the whole consciousness of the individual may be given over to the current life process which draws force and color from the most varied levels and periods of his earlier life.

4. THE DOCTRINE OF UNCONSCIOUS IDEAS

There are psychological theories that attempt to explain bound memory by means of the trace theory, without the assistance of personalistic conceptions. Instead of simply stating that mnemonic stimuli produce preparatory and dispositional attitudes of a definite sort, these theories assume the preservation of the content of mnemonic stimuli in the form of "ideas"; but since these ideas do not appear as such in consciousness, they are called "unconscious." Ideas that are naturally closely bound together form a "complex of ideas"; every person has many such complexes that are derived from the different periods and activities of his life, and it is these that influence his mental life at later times.

The doctrine of *unconscious complexes of ideas* has exerted considerable influence upon psychology in two different forms. These

¹ Cf. the considerations in Chapter XXIII on settings of will and the dynamic traits of character.

are Herbart's theory and psychoanalysis. It was *Herbart's* purpose to explain above all else *intellectual* persistence, that is, the stock of culture, by his theory. Each group of experiences is precipitated in the mind as a more or less inclusive, more or less solidified complex of ideas; this is maintained for the broad domains of life—home, family, occupation, country, as well as for the narrower areas—pedagogical material, travel experiences, transitory business and domestic affairs, etc. These complexes of ideas are the true carriers of intellectual activity, for whatever new items are encountered by the individual become his mental property by insertion into some complex that is already present. The Herbartian school calls the process of integration "apperception," and the receiving complex of ideas the "appceptive mass" (or the "organ of apperception" in imitation of bodily organs of prehension).¹

The *psychoanalytical* theory of complexes pursues different aims; its purpose is to explain the mnemonic after-effects that are bound up with the activity of emotion, instinct, and will. The complexes of this order are usually not derived from ordinary impressions, but from stirring experiences or their consequences which operate *dynamically* and work mischief. Such a complex is on this account not, like an Herbartian apperceptive mass, a helpful point of reference for present and future developments, but continued activity, lurking in the depths. While the ideas contained in an Herbartian apperceptive mass, are considered unconscious but ready to become conscious on any occasion, the contents of a psychoanalytical complex are not merely unconscious, but present violent opposition to being made conscious.

In spite of these differences, however, both theories of complexes have a great many essential points in common, on the positive side as well as the negative.

Both theories systematically treat the significance of memory for the *personal history* of each individual. They complement each other by treating both the genetic importance of every day experience ready to reenter consciousness (Herbart) and of unusual traumatic experiences the after-effects of which are hostile to consciousness (psychoanalysis).

On the other hand, the *mechanistic* feature of both theories—it is more essential to the Herbartian, of course, than to the Freudian²—

¹ The term "apperception" has unfortunately been employed in German psychology and philosophy in several wholly different senses, e.g., by Leibnitz, Kant, Herbart, Wundt. In view of this confusion it would be best to dispense with the term altogether in the vocabulary of scientific psychology. It is indeed possible to get along without it.

² To be sure, psychoanalysis is much closer than the Herbartian doctrine to the possibility of forming a profitable relationship with personalistic points of view. An examination of its development over a generation reveals a slow but distinct turning away from the mechanism of Freud's earliest proposals and an approximation toward personalistics.

must be rejected. The ideational complexes are conceived as little independent dynamos within the individual, that determine subsequent mental processes *by themselves*, so that the individual in whom they exist, the personal, active totality, is thrust aside.

The doctrine of "unconscious ideas" must likewise be rejected. There is no doubt whatever that bound mnemonic operations are "unconscious" in so far as they are not in consciousness during the latent period and need not lead to manifest conscious recollections even when they become effective in an indirect way. But it is precisely *because* these operations are unconscious that they are not present as *ideas*. On this point the theory goes astray because of the untenable presupposition (see p. 193) that mnemonic operations are possible only in the form of preserved *content*. Therefore the prior content would continue to be present during the latent period as "ideas," but not as conscious ideas! This assertion is neither substantiated by experience nor logically consistent. There are unconscious data in the person only in the form of dispositions, as readiness and attitude, but not in a substantial form as mental content.¹ But if one thinks in personalistic terms, the assumption of mnemonic readiness as the causal factor in bound memory is sufficient, and the fantastic conception of unconscious ideational complexes becomes superfluous.

Having dispensed with the concept of "idea" in regard to bound recollection, we are able to explain its true significance as the conscious product of *free* recollection.

¹ Cf. p. 79.

CHAPTER XII

FREE RECOLLECTION

I. MEMORY IMAGES

I. IMAGES AND PERCEPTIONS

The operation of a mnemonic stimulus is "free" if it is detached from current primary process. While I am sitting at my desk and perceiving as *present* the paper, pen, and writing, the noises in the street, the view from the window, etc., I can have in my consciousness *at the same time*, although pertaining to another sphere, an image of Mount Vesuvius, which I saw years ago, or I can make present the melody of a song or the face of an acquaintance.

Consciousness is thereby released from its dimensional restriction to the simple present; it becomes stratified. "*Here and now I experience that which is not here and now.*" This principle opens the mind of the individual to projections in *all* directions, spatial and temporal, forward and backward. In so far as that which is "*not here and now*" is experienced in a concrete form, we call the mental content *imagery*.

We are concerned for the moment only with the temporally *backward* direction and consequently with memory images.

Here a terminological confusion obstructs understanding. The term "idea," first used by thinkers of the 18th century for psychological purposes, has acquired such a wide and manifold application that it has lost most of its scientific value. It comprises epistemological, logical, psychological, metaphysical and ethical meanings; and within psychology it is applied to concrete as well as to abstract contents of consciousness.

We shall restrict the use of the word "idea" to the very infrequent occasions in which the sum total of intellectual content other than perception is meant, or the character of the content is undecided. We prefer, moreover, the terms "image" and "representation"¹ for the more concrete contents, and "thoughts"² for the more abstract. Memory and imagination deal predominantly with images, and rationalizing with thoughts, though *predominance* does not imply exclusiveness.

Through memory images an object is experienced that was pre-

¹ In German: *Vorstellung, Vorstellungsbild*.

² In German: *Gedanke*.

viously experienced through a perception; it is the *same* Mount Vesuvius that I once saw and now remember. This identity of the *object* has been explained by many psychological theories in a naïve manner as the equality of phenomenal conscious content; the image is supposed to conform in its experiential character to the original perception. This hypothesis was strengthened by the trace theory, according to which the memory image can be nothing but a perception that has been deposited somewhere and is later recalled. Hume's proposition, "Ideas are copies of impressions," has been repeated since his time in innumerable ways.¹

Let us test this proposition with a *comparison of the phenomenal content of perceptions and images*. That they cannot be identified absolutely, even the trace psychologist must admit; for otherwise we would confuse them and expect to perceive something present in every image. The difference—which is thus indisputable—is reduced by the mechanistic doctrine to a mere difference in degree; images are held to be *faded* impressions.

But there are differences of degree, called grades of intensity, among perceptions themselves, e.g., between more or less brightness, between loudness and softness, etc. Is the difference between perception and image a difference of this sort? Is an *imagined* fortissimo as soft as an *heard* pianissimo, or louder, or softer? The question is absurd; it is obvious that the special character of an image has nothing to do with such grades of intensity within perception. Even the most finely aspirated pianissimo, if it can be *heard*, is separated from the most intensely imagined fortissimo by virtue of its sensory character of audibility.

What is lacking to the image as compared with the perception is consequently not a definite degree of intensity, but that special characteristic that we have described as "concreteness" or "evidentness" in perception; the unqualified conformity to the object, which is inescapably present. Even the most vivid images are non-sensory, pallid, and indefinite in comparison with this clearly sensory quality.

Let the attempt be made to imagine "red strawberries among green leaves." When these words are heard or read, it is understood what is meant, and some sort of inner picture may also appear. But how large are the strawberries? What is the shape of the leaves? Against what background do they stand out? What position in space do they occupy? What shades of red and green are experienced? Here is another example. There comes to mind a close acquaintance whom you see daily. You will notice in this representation the same indistinctness, together with fluctuations in his position, clothing, and the direction from which you

¹ In Germany Herbart a century ago, and more recently Ziehen, were the chief proponents of this view; but it persists in many other theories.

regard him, etc. While preoccupied with the solution of a problem in geometry I may have an image of a right triangle, represent construction lines to myself, etc., without in any way fixing its size, individual shape, the color of its outline and surface. The same thing obviously holds true for images that belong wholly or in part to other sense departments.

This *lack of distinctness* of images is of an entirely different nature from the indefiniteness belonging to the actual sensory perception of an object that is distant or is shrouded in mist or twilight. In sense perception a deficiency is present, that can be eliminated by varying the conditions of perception; but with images it is a question of an essential characteristic. For the indistinctness is the correlate of another positive attribute of the image, its *inwardness*. The image belongs to oneself in a different sense from a perception that is forced upon the individual by the situation; it does not become so sharply salient among the other contents and processes of the person, but is more or less deeply embedded in them, and is able, by reason of its indefiniteness, to enact a quite different rôle in the multiform and constantly changing activity of the person.

We must here revert to the series that was earlier presented (see p. 201). The memorial representation is manifestly an intermediary between the more sensory stages in the apprehension of an object (perception, after image, eidetic image) on the one hand, and the less sensory stage of *thought* on the other. As an intermediary *it stands between sensation and thought*, between the concrete and the abstract. It partakes to some extent of the nature of both; it is not wholly abstract like thought, nor is entirely concrete like sensation; it idealizes perception while making thought more realistic.¹

This middle region in which images are active is broad in scope; there are images that are more like sensations and are therefore richer and more complete, though also more rigid; and those that are more like thoughts and are consequently more mobile and flexible, while less concrete. There are accordingly persons whose imaginal activity as a whole has more of the sensory or more of the intellectual character. The result of this is a *typological* division. As compared with the abstract imagery of scientists, artists often illustrate the concrete imaginal type.

2. IMAGINAL TYPES

A still more explicit typology results from the predominance of imagery corresponding to the *particular* sense departments. Thus a visual, an auditory, and a kinaesthetic type may be distinguished. The "visualizer" has need for rich and varied optical impressions; also his imagery possesses a more sensory tone and form than that of

¹ For a more detailed treatment see p. 281, where the scale is presented.

non-visual people. The extreme visual type shades off into the eidetic type, which as we saw is disposed toward images that are still closer to perceptions.¹

For the pronouncedly *auditory* individual the world is centered chiefly in sound. Noises, the acoustic properties of language, and above all music, provide the predominant material for his imaginal activity.

Under the *kinaesthetic* type are classed those people whose imagery is based mainly on the experiencing of their own bodily movements.

This classification is lucid and simple; indeed it is too simple to do justice, even approximately, to reality. Clear illustrations of the three types are seldom found, and then principally among creative artists.

There are "visual" painters whose personal world appears to resolve itself entirely into light and color, and who have images of such clearness and permanence that they are able to paint from them without having recourse to a model or natural scene. Many a great musician has been shut off from everything that was not melody and harmony, living only in terms of tones that he did not need actually to hear because he carried them with him in the form of auditory images. (Thus the deaf Beethoven, because of his capacity for auditory imagery, was able to compose the ninth symphony.) In exponents of gymnastics, the dance, and athletics, not only is the awareness of their own bodies on any occasion very vivid and impressive, but their imaginal activity is permeated extensively with kinaesthetic experience.

For the vast majority of people, however, there is no such conclusive singling out of *one* sense department and the imagery proper to it; they belong to the "mixed" type. If this division into types is not to lose its meaning for psychology it must be interpreted with great liberality. Thus an individual is considered "visual" if his visual imagery is more vivid and colorful than that of the average person, even though the domain of vision does not necessarily exercise the predominance described above within his personal structure.

Finally, imaginal types have acquired a still narrower significance as giving specific help to *mnemic* activity. The human mind must retain certain things that may be apprehended by several senses. *Verbal* material is a prime instance, for language can be taken in by hearing as words spoken by another, visually through reading, and kinaesthetically through the movements of one's own mechanisms for speaking and writing. The individual's verbal imagery thus contains components from all three sense departments, though the proportion of these constituents may vary considerably. Most people have a predominantly auditory-kinaesthetic disposition for language, and enlist images of sounds and of their own speech-movements as

¹ See pp. 201, 202.

aids in learning and reproducing verbal material. There are also "visualizers" of language who "see" verbal constructions as if written and printed and thereby facilitate the task of memorizing.

The various experimental methods for testing and determining types of imagery, now regarded as largely obsolete, as well as the earlier, much overrated, pedagogical conclusions that were drawn from this division into types are not topics of general but of differential psychology.

3. KNOWLEDGE AND REMEMBRANCE

Memorial representations have two main functions to discharge in the life of the person. As "knowledge" they consist of the items that become conscious; as "remembrances" they reflect in consciousness the person's life history.

Both kinds of imagery are derived from the individual's past, but while their mnemonic origin is unimportant in the case of knowledge, it is decisive for remembrance. The personal significance of verbal, geographical, literary, technical, or other knowledge is not dependent on when and how it was acquired; it is important only that it is on tap when required and that its availability for future personal undertakings may be counted on. But the personal significance of remembrance depends directly upon the ability of the consciousness to identify the primary process of the original experience and thereby to relive its past in the present.

The two functions of memorial images are obviously not wholly distinct. Whenever I make use of the *knowledge* of a previously learned foreign language I am also able to remember the particular situation in which I learned it—perhaps as a child, or as a stranger in a foreign country. Conversely, *remembrances* of journeys that I have made and of events of world history that have come into my experience, signify also the lasting enrichment of my store of knowledge.

On the other hand, the two functions sometimes stand in sharp contrast. The individual possesses a considerable amount of knowledge that is wholly free from remembrance. This is true, for example, of by far the larger part of the vocabulary of his native language. Only a very few expressions and idioms are consciously attached to any feature of the person's life history; indeed the earliest knowledge of language is obtained at a time for which there is no remembrance at all. Similarly every person has *remembrances* that are so individually toned and so completely bound up with some past situation that cannot be repeated (e.g., the remembrance of a dream), or are inconsequential as items of knowledge.¹

¹ Both forms will be treated separately in Chapters XIII and XIV.

II. ASSOCIATION AND MENTAL SET

There is no such thing as a "single" isolated image. All imaginal content is present only in broader and narrower connections from which it develops, within which it becomes embedded, and through which it is transformed into other content. This multiplicity of images results in combinations and fusions, serial processes, partitions and representations, etc.

This incessant imaginal activity¹ long ago became a problem for psychologists and occasioned controversies which lasted for centuries and are not settled even today, the focal point of which was the disputed concept of *association*. In spite of its advance beyond the older associationism, present-day psychology must not ignore this concept, but must seek to include the facts of association in its own anti-associationistic principles.

I. THE EMPIRICAL CONCEPTION OF ASSOCIATION

To begin with it must be established that the term association is manifestly of great service in describing numerous *empirical* facts. There are imaginal contents that are closely connected in such a special fashion that the presence in consciousness of one item signifies a probability that another will become conscious. If I read the French word *père* the verbal image "father" may at once arise, perhaps also a representation of my father. If I see an extremely unripe apple there appears almost by compulsion the gustatory image of acid, the tactful image of hardness, perhaps also the image of my own movements in choking, spitting, etc. If I read the sentence "To be or not to be—that is the question," it is highly probable that imagery will also appear that has to do with Hamlet, Denmark, Shakespeare, perhaps with a particular performance of *Hamlet* seen many years ago.

Such combinations of images may be demonstrated *experimentally*; by pronouncing a word, exhibiting a picture, etc., a definite image may be evoked that is closely allied with the stimulus. The "time of association" elapsing between the exposure and the response may be measured by a stopwatch or chronoscope.

The common *mnemic derivation* of many such associations of images is likewise empirically demonstrable. If several impressions have been connected temporally within one primary process, a predilection for their common reappearance exists. This is called association by *contiguity*.

The more frequently the temporal connection is realized the greater is the readiness for restoring the association. This *tenacity of association* is a mnemic effect of repetition similar to those mentioned in

¹ *Vorstellungsl Leben*.

connection with the experimental training of animals, the only difference being that in their case the mnemonic stimulus becomes associated through repetition with a movement, while otherwise the association takes place between mental contents. This kind of association has been exhaustively studied in psychological experiments in human learning that have been conducted everywhere since Ebbinghaus began them in 1885.¹ The temporal unity of the stimulus may mean either simultaneity or immediate succession; hence two types result.

Simultaneous associations. In the case of the unripe apple the images "sour" and "hard" are present at the same instant as the sight of its green color. If there comes to mind some very common word (such as "table"), its meaning and perhaps also a visual image of the object are given at the same time.

Successive associations. At first, anyone who is *commencing* the study of a foreign language has in succession the verbal image of a foreign word and then the translation. With increasing practice these items continue to draw together until finally, when there is considerable fluency, they become simultaneous. There are also successive associations, the nature of which consists in the fact that their terms cannot become simultaneous, e.g., the words of a poem that has been memorized, the tones in a melody.

More important for psychology but less noticed until now, is the distinction between intra-association and inter-association. *Intra-association* is the relationship of items *within* an original total experience. If the mnemonic stimulus is a mental configuration or Gestalt, that comprises a plurality of ingredients, the relationship between these ingredients does not have to become established; it exists from the beginning and may be demonstrated later simply in terms of an associative response. For example, if a simple melody is heard every time as a complete sequence, it is impressed upon the mind as a unitary, melodic whole. Thereafter when the first two or three notes are heard, the rest follows of itself in imagination. It is evident that intra-association involves essentially the same principle that was mentioned earlier (p. 114) as the completeness of Gestalt; here, however, we are viewing it from *beneath* (i.e., in terms of the ingredients contained in the Gestalt and of their interrelations).

Inter-associations or "couplings" consist of items that are originally separate and independent but achieve by their temporal coincidence a connection not inherent in them, which is afterward retained. For a person studying foreign languages the English and French words for the same object are at first separate representations that must become coupled together. If while traveling I make the acquaintance of Mr. X, the entire complex of impressions relating to that gentleman, the

¹ See pp. 240 ff.

conversations that I held with him, etc., may in themselves have nothing to do with the journey; but subsequently there rise images of the journey whenever I have an image of X, and vice versa.

The following empirical definition proceeds from the foregoing considerations: *Association is a relation between items in mind of such nature that the appearance of one of them involves the readiness to arouse another.* Defined in this way, the conception of association in modern psychology is not only justifiable, but plainly indispensable, and there is no ground for removing it from the vocabulary of psychology as many contemporary psychologists wish to do.

Besides association by contiguity there is another form that has nothing to do with prior temporal coincidence, i.e., association by *similarity*. When I see the full moon rising above the horizon as a yellow disk, the image of an orange comes suddenly into my consciousness, though I had never before seen the moon and an orange simultaneously. The present impression revives similar previous experiences.

2. MECHANISTIC THEORIES OF ASSOCIATION

The concept of association becomes a matter for dispute only when *theoretical hypotheses* exploit it. In the mechanistic conception of mind this particular concept is made the sole principle for explaining mental life. Association is supposed to play in the sphere of mind a part similar to that of gravitation in the physical world; it is regarded as *the law* that describes exhaustively the relations between mental elements. For present-day psychology to come to terms with this view of association is utterly out of the question, since it rests upon untenable assumptions.

The first assumption is that association is a process that takes place *between elements*. As mental atoms, images are bound together by a cohesive force resulting from their contiguity or similarity. This basic principle of cohesion alone determines which items appear and disappear, how they join and disperse, whether they occur serially or in groups. According to this theory, then, any ruling principle of a personal unity, any meaningful structure, and any purposive activity would be excluded from associative combinations. This flatly contradicts the evidence that images are not independent "elements" but states of personal experience, and that their interrelations are also arrangements of the meaningful totality of the person and are causally dependent upon it.

The second assumption is that mental activity can be explained *completely* by the principle of association. This denies the possibility that another kind of relationship could exist besides association. The claim is advanced, that even those mental processes that *seem* at first to be based on other principles, particularly the activity of feeling,

thought, and will, must in the last analysis be regarded solely as associational phenomena.

It is now necessary to introduce *constructive* criticism that will enable us to ascertain the proper place of the concept of association in psychological theory. If we view in greater detail those processes that are brought forward by the mechanistic psychology of association as prime illustrations of the doctrine, we find that what they have in common is in nearly all cases *negative*; they are processes that are *not* directed by the person's focussing of a definite conscious aim, whether an intellectual objective, a creative endeavor, or an intention to act. Processes of this type are dreams (both night- and day-dreams), flights of ideas, and fantasy constructions; also ideational linkages that form a stereotyped sequence (such as a text mechanically memorized) and fancies that intrude involuntarily; and finally *within* deliberate acts, certain deviations, mischances, and errors that are not adapted to the goal.

This observation is important because it brings us back to empirical evidence. *There are countless instances in which ideational processes run their course without the immediate intervention of any act of the person that bears expressly upon them.* Indeed, we may even go further. There are instances in which associative processes successfully *oppose* personal acts that are calculated to obstruct them. (The determination to forget something or to conceal something from others may result in the most stubborn preoccupation of consciousness with imagery pertaining to it, and even in the overt betrayal of it through expressive movements or slips.)

Associationistic psychologists universalized this type of mental process and attempted to carry over the principle of association to purposive personal performances of thinking and willing. These are not, so they argued, real *acts of the person*, but simply passive combinations of elements that happen to be more complicated and less easy to analyze. Much ingenuity was exercised in the attempts to represent exhaustively every process of human thinking and volition in terms of associationistic psychology; many associative processes interfering with conative and cognitive acts were thereby discovered that had not previously been noticed. But the avowed aim could not be accomplished, for an act can never be transformed into mere occurrence, into mere *laissez faire*, nor purpose into the mechanical movement of elements.

This makes clear the historical significance of the attack that Wundt waged against Herbart. Herbart had attempted to make the "statics and dynamics of ideas" the sole principle of mental activity in general. In opposing him, Wundt emphasized the necessity of distinguishing in ideation between associative and non-associative

combinations, and he called the latter "*apperceptive* combinations." According to Wundt apperception is an inner purposive activity that is manifested in the mental processes of attention and thought as well as in volitional processes.¹

The exclusive sway of association was thereby done away with. But was it not replaced by a precarious dualism? Was not ideational activity thereupon broken up into personally determined ("apperceptive") and impersonal (mechanically determined associative) processes? That this difficulty was not attacked critically and openly by Wundt may perhaps be viewed as the principal weakness of his doctrine.

3. PERSONALISTIC INTERPRETATION OF ASSOCIATION. SUSCEPTIVITY AND MNEMIC SET

There is indisputably a difference between the two modes of mental events, but it lies *within* personal (that is, "non-mechanical") causality. In processes of thought and will this causality is expressed by conscious, purposeful *acts* of the person, but in associations by *personal dispositions*. This must be established for both the origin and the release of associations.

a. *The origin of associations.* We saw that *associations by contiguity* originate in the temporal coincidence of stimulation. But not everything that is experienced once—or even frequently—together with something else, is thereby coupled with it in such a way that both will necessarily be reinstated as an associative combination. A high degree of *selection* is operative that isolates only a very few pairs and groups of temporally contiguous primary experiences in mneme and thus establishes their associations. This selectivity is traceable to a dispositional readiness of the person, to his *susceptivity to mnemonic stimuli*.

The mechanistic doctrine of association could not acknowledge this selectivity without having to sacrifice its basic principle. For the fixing of association was supposed to depend upon the purely *formal* conditions of duration and frequency of coincidence, while no meaningful relation played any part whatever. But in reality *no association can originate in the individual without having personal relevance*. The person has mnemonic susceptibility for such contiguities in experience as are not inconsequential and indifferent to him.

To be sure, the concept of "personal relevance" must be given sufficient breadth of scope. Its signification is clearly revealed in a number of ways as shown in the following three types of cases.

(1) Intra-association between the ingredients of *one Gestalt* (e.g.,

¹ On the concept of apperception see p. 212.

between the tones of a melody) is explained immediately by the fact that the configuration as a whole has unitary personal significance.

(2) Situations and events that protrude from the uniformity of every day life and are thus liable to be remembered as notable phases in the person's life history, retain a special kind of mnemonic effectiveness on account of their personal *genetic* significance. Mnemonic efficacy extends not only to single isolated experiences, but also to the temporal community, which later becomes effective in the form of fixed associations.

(3) Numerous associations are initiated intentionally and by voluntary exertion, in order to assure the establishment for the individual of relationships important to the person; all *learning* activity is of this nature.

But the meaning of all associations is certainly not so immediately evident; many of them appear to be definitely nonsensical. Even these, however, furnish no argument against the thesis that the origin of all associations is due to personal relevance.

The personal reference under which the association is *initiated* does not need to become actualized at the later time, when the association is reinstated, and is therefore no longer understood. This results with all of us in numerous associations, that we have retained since childhood. Why does it happen that a certain visual image has at one time been associated with some verbal expression; or some inconsequential action or mannerism of a certain person with the idea of the person, and so firmly, that even after decades one of the representations immediately arouses the other? The connection is no longer understood because one's own state at the time of the primary experience cannot be repeated at the present time. Originally, however, there must have been some personal motive for singling out this combination among all other simultaneous experiences and giving it a mnemonic emphasis.

There is another point that is still more important in interpreting seemingly "senseless" associations: *personal relevance is not conformity to the person's rationalized purposes.* What is a meaningful activity for the person is carried out only to a very small extent on the level of logical deliberation and insight. The activation of instinctive dispositions and states of tension in the domain of feeling may lead to the result that connections between ideas acquire a personal accentuation of a special kind. Perhaps it is just because they are "nonsensical," because they disrupt the personal equilibrium, that the calm surface of the person is ruffled. Their being "nonsensical" is not a meaningless mechanical process; personal relevance exists, though it may be negative.

Thus in the formation of associations we encounter a duplicity

of personal relevance¹ that may be summarized as follows: *By virtue of special mnemonic susceptibility the person is confronted with such mnemonic stimuli and combinations of stimuli as are meaningful for him. Personal relevance may have either a positive or a negative sign, i.e., it may directly promote the person's organized aims or it may disturb them.*

b. *The reactivation of previous associations.* Let us suppose, that an association has been formed at one time between the items *a* and *b*. Does it necessarily follow, that the mere reappearance of image *a* will be sufficient to bring *b* into consciousness? The answer must clearly be negative. To anyone who has learned French, the verbal images "meat" and *viande* are associated. Nevertheless it does not follow that every time I come across the word "meat," *viande* will come to my mind at the same time. The imaginal process may follow a wholly different course, perhaps from "meat" to "cattle," "processing tax," "politics," or from "meat" to "bread," "fruit," and other foodstuffs, etc., etc. Or perhaps nothing at all will be associated with "meat" because imagery of a different sort at once takes hold of my consciousness. *Thus in order to actualize a particular association, a principle of selection must again operate.* What constitutes this principle?

As far as this selection is conditioned by a particular goal, a directed act—as in processes of thought and volition—we must postpone the discussion. At present we are interested solely in the *dispositional* conditions of the release of association. The person must bring an appropriate attitude to bear upon an experience that has *previously* formed an association, if the association is to be mnemically restored. We call such an attitude a "mental set."²

The course of association, in so far as it is not restricted by the immediate interference of acts of will and thought, is dependent upon the person's mnemonic sets at the moment. It must be remembered that although a mental set is a personal readiness that is attached to some *domain* of content as a whole, as a disposition it is still indefinite and potential. In order to activate a circumscribed portion of that domain, an immediate *release* is required that may be elicited by a sense impression or by an idea arising from some other source. This exceedingly important process must be illustrated by a few examples.

(1) In a French class the student is "set" for the reversible task of apprehending French verbal material in relation to English words. This delimited set operates so that at any time the word "tree" really leads to the translation *arbre* and not to any of the other countless verbal and visual images that may be associated with "tree." If his next class is German, the result of his altered set leads him, without

¹ See the criticism of Herbart's and Freud's theories of "complexes" p. 212.

² *Einstellung.*

deliberating to associate the word *Baum* with the word "tree."

(2) Printed musical notes may stand for many tones, according to the clef of the signature. If the treble clef is at the beginning of a piece of music, the perception of it institutes a general set for the reading of all the notes that follow, of whatever sort they may be. A note in the third space will naturally be associated with the name C, with a visual image of a specific piano-key, and with the corresponding finger movement. In the middle of the piece the bass clef suddenly appears, and now the person playing is switched to a different region; the altered set provides the association of quite different names and keys with the identical printed notes. The previous images, now no longer appropriate to the set, do not normally appear at all, no matter how dominant they were.

(3) In a newspaper advertisement the heading suddenly appears in bold type: "Lecture on the extraction of roots." The botanist "associates" these words in the sense of the roots of plants, the mathematician, of square roots, the dentist, of the roots of teeth. Thus the predominating vocational set determines the meaning that is attached to the printed caption.

(4) Someone has committed a crime and thereafter the set persists that he will be sought out and identified. This set determines not only his conduct and the directing of his attention, but his associations as well. If he accidentally exchanges glances with a passerby and hears indistinct shreds of conversation, etc., these impressions lead him to imagine his deed, its accompanying circumstances, and the attendant anxiety.

(5) In a psychological experiment nonsense syllables are phonographically reproduced. The auditors are supposed to state how they perceive the sounds. Meaningful words are nearly always heard among them, but quite variously, according to the set. A young man associates nothing but girls' names with the syllables he hears, thereby betraying an erotic set.

The sets that are at the bottom of the imaginal processes have a dual origin. They are acquired; they are also determined by the constitution. While the vocational set illustrated by example (3) rests principally upon the basis of acquisitions, the erotic set of the young man in (4) must be explained by the native peculiarity of his predominant urges. There are, however, no pure sets of one kind or the other. The vocational sets (3) are weighted with countless empirical after-effects of vocational experience, but inborn inclinations and abilities have likewise contributed to these sets. Conversely, while the leading erotic tendency in (4) is evidently instinctively conditioned, the many girls' names that were so readily at hand came from the store of mnemonic experience.

It is important to distinguish between these factors in the creation of sets because they offer a new disproof of Herbart's doctrine of apperception. According to Herbart it is *experiences only* that are organized into apperceptive masses, and thus determine all association. Since ideas are not innate and since Herbart could think only in terms of "ideas," the acknowledgment of constitutional sets and associations determined by them was not possible for him.

As *unity in multiplicity*, every person has at his disposal countless possible sets. He possesses sets that are lasting (vocational sets, sets relating to the family) and sets that are quite temporary (cf. our examples (1) successive class periods and (3) notes in musical clefs). There are those that are always ready to operate, and others that require a strong incentive. But in the face of this multiplicity we must avoid the danger of replacing the earlier mechanics of *ideas* by a mechanics of *sets*. The decision as to which set is dominant at any given time and specifically determines the ideational process, comes not from the quantity of force that belongs to a single set as such, but from the dynamics of the total person. The structural unity of the person, his permanent and impermanent goals, his rhythms and tensions, give effective strength to the various possible sets and determine the instant of their operation.

4. ASSOCIATION EXPERIMENTS

The empirical investigation of association has occupied both experimental psychology and depth psychology. For this purpose, either paired experiments or free-chain investigations are employed.

In *paired experiments* many stimuli are presented in succession (words, numbers, or pictures); the subject is to respond to each stimulus with the first word that offers itself by association. The replies and the times needed for each of the associations are recorded.

a. *General psychological problems.* The original purpose of these investigations was to obtain "laws" of the associative processes. Through the determination of the relationship between stimuli and induced ideas, various relations of similarity, contrast, contiguity in time and place, super- and sub-ordination, etc., were discovered, and it was believed that the *principles* of associational processes had been established. The justification for this conclusion was found in the fact that *according to the instructions* reflection and deliberate selection of the response by the subjects were excluded. Passive acquiescence to the stimuli, and hence an attitude that seemed favorable to pure associative activity, were required.

But this supposition is inconclusive. The subjects are not at all emancipated from thought and volition. They are supposed to be

intentionally set to carry out unintentional acts, to fulfill the meaning of the task by the avoidance of meaningful thinking, to break off at once any increment of thought that happens to be initiated by the stimulus and to come to the succeeding stimulus entirely without preconceptions. Genuine "free" association is not possible in a situation so artificial and contrary to nature. This is proved by the measurement of the time; the average "association time" of half a second in the paired experiment, that is to say, the time required in going from the first item to the other bears no resemblance to the great speed with which uninhibited sequences of ideas are effected in real life. The significance of association experiments belongs to two quite different spheres, the one being that of the psychology of thought (of which more later), the other that of psychodiagnostics.

b. Diagnostic problems. Since as we have seen, all associations possess personal significance, they must be capable of being *interpreted*, i.e., they must serve as indicators of other aspects of the person who achieves them. The deeper-lying content of the individual's mind may be gathered from an interpretation of his associations. From this point of view the additional method of *free chain association*, permitting far greater freedom to the subject, was developed along with the paired experiment.

Here the experimenter or clinician initiates a chain of association by presenting one or a very few stimuli; the subject does the rest by reporting the chain of ideas that unrolls spontaneously within him, without any interference by deliberation, volition or inhibition. This procedure is extensively used in depth psychology, where the experimenter interferes but infrequently and prudently with the progress of the "chain." Above all, every precaution is taken to insure that the whole mental atmosphere of the subject or patient is conducive to spontaneity and to the exclusion of intentional cognition or conation.

The contrast between the old and new aims of association experiments may also be expressed in this fashion: It was formerly believed possible to obtain associations that were independent of thought and volition and that constituted, as it were, "pure" connection of ideas. Nowadays the attempt is to comprehend through associations that side of the person which is *opposed* to conscious and intentional thought and volitions; to lay bare the unconscious *sets* that are operative for the individual. The individual thereby betrays himself through the nature of his associations. This symptomatological use of the association experiment takes four principal forms.

(1) *Permanent dispositions* of the person are expressed in associations. The narrowness or breadth of the mental horizon is revealed by the monotony or variety of associations, a slow personal tempo,

or an inhibited nature by excessively long association times. Peculiar individuals, those given to fantasy and those having a passion for originality, are identified through their selection of unusual associations. Dominant interests are betrayed in the recurrence of certain associations.

(2) *Representations of the person's temporary condition* are reflected in the nature of his associations. This is especially true of pathological conditions. Both abnormal perseverations and their antithesis, "flights of ideas," are brought to the fore by free chain associations; depressed moods, self-reproaches, phobias, conditions of exhaustion and even insanity and other abnormal conditions, may be discerned in the content of associations.

(3) *Repressions* of a traumatic sort may be raised to consciousness by way of association, and thereby become *ab-reacted*. Sometimes shocking impressions as such may have disappeared from consciousness without however being removed from mneme. They continue to operate indirectly through an altered mood that possesses itself of new imaginal areas. Psychoanalysis has developed the theory that these unwholesome effects can be exorcised only by raising the original excitant to consciousness again, thereby releasing the entire mnemonic process once and for all. This reinstatement in consciousness is achieved through free association. To that end the attempt is made to produce as passive a condition as possible, in which the patient can yield himself to the play of his imagery. Gradually those images arise that are closer to the cause of the trauma, until finally the source itself is uncovered, and is restored to consciousness and expression.

We are not here concerned with the therapeutic question as to whether this method really leads to "ab-reaction" and consequently to complete recovery from the trauma. But the general psychological supposition that it is possible to remove inner inhibitions by yielding to the associations and thereby to deliver up hidden effects of experience, is certainly accurate. Moreover it forms the basis for the following application of the association experiment.

(4) *Conscious intentions to conceal* with reference to personally significant experiences may be broken down by means of association experiments ("factual diagnosis").¹ The set of a criminal with respect to his crime (see our example (4), p. 226) persists in spite of the conscious intent to conceal the deed. The instructions in the paired experiment, to respond to each stimulus word as it is spoken with the very first idea, will also bring to consciousness and perhaps even to verbal expression—especially in response to "critical" stimulus words—memories of the crime which are all in readiness. But if the will to

¹ Tatbestands-Diagnostik.

conceal proves to be strong enough to inhibit the utterance of telltale associations, the person undergoing the test needs time in which to find a "harmless" word; and thus the lengthened reaction time for critical stimulus words may operate as an indicator of the guilty "set."¹

¹ Experiments diagnostic of guilt are primarily of *theoretical* importance because they indicate how the forces within the person are arrayed in conflict. These energize deliberate purposes on the one hand and dispositional sets on the other; in every telltale association the motivation from a more deeply embedded personal state triumphs over the salient act of will. The application of the association experiment to the *practical* problem of convicting criminals has thus far succeeded only in a very few individual cases; such application is opposed by weighty ethical considerations.

The psychological literature on factual diagnosis, beginning with an investigation of Wertheimer and Klein and carried further by many others, has been brought together in a summary by Otto Lipmann.

CHAPTER XIII

THE ACQUISITION AND POSSESSION OF KNOWLEDGE

I. GENERAL

I. BOUND AND FREE CONTENT

Among primitive mnemonic phenomena we met with so-called "bound" memory,¹ in which the subliminal after-effects of past impressions determine man's present cultural and practical attitudes. From this dispositional basis of personal cultivation there also arises more complicated and distinct mnemonic content, the revival in consciousness of isolated items acquired in the past. These may be designated as items of "knowledge."

The possession of a broad and organized fund of salient knowledge is apparently peculiar to *man*. Among subhuman animals memory images occasionally arise (as we may infer from expressive movements in dreaming animals); but their range and significance for life are negligible in comparison with animal performances that are made possible by means of bound mnemonic operations. Even on the human level the growth of knowledge is one of the most important genetic characteristics, both in the course of the life of every individual and in the advance of human civilization.

But the connection between the two mnemonic spheres is never lacking; the meaning and importance of free memorial representations may be understood only in terms of this connection with the lower mnemonic level. This insight is diametrically opposed to those earlier attempts of mechanistic psychology to derive learning, retention, and forgetting purely from the laws of ideational processes.

A special tension invests the connection of mnemonic sets and actual knowledge, in that knowledge is singled out from the sets, while at the same time remaining embedded in them.

On the one hand, progress in development consists in the differentiation of memorial representations as *independent Gestalten*; thus what was formerly acquired may be retained by present consciousness in a variety of detail, degrees of clearness, and association, and finally becomes projected outwardly and actualized in the form of particular accomplishments—as concrete special knowledge or patterns of activ-

¹ See p. 206.

ity. The more highly developed situations of human life and culture require such differentiation, specialization, and bringing to consciousness of acquired experience; they cannot be mastered merely on the basis of sets that have come to be taken for granted.

On the other hand the danger is constantly present that this salience may lead to *detachment*; knowledge threatens to assume the rigidity of self-sufficient structures and to loosen its connection with the total life of the person, unless it continually becomes embedded in the lower level and draws from it meaning, mobility, and many sided applicability.

This ambivalence of the salient and the embedded furnishes the scientific explanation for a view that has long been held in popular psychology, that knowledge may signify both *cargo and ballast*, and that it is attached to the depths of the person in varying degrees. According to this conception, the highest stage of mnemonic development is reached when the individual has at his disposal numerous items of knowledge that are capable of becoming salient and which, being completely integrated at the same time, are always capable of becoming embedded. One result is the individual in whom the salience and consequently the depersonalizing of knowledge is predominant; the "walking encyclopaedia" who knows many things "by heart." Another is the individual who has attained a deep and many-sided cultivation, and has had much experience of life, but is inadequately equipped to draw from it the requisite special knowledge in a particular instance. Without doubt there are psychological types of great significance that, remarkably enough, have been scientifically investigated but little up to now.

Every examiner who knows something of people has ample opportunity for observing both types among those taking an examination. Besides these, there are the indifferent type, possessing neither salient nor embedded knowledge, and—more rarely,—that ideal type in which salience and embedding have attained complete harmony. Just because it is natural in an examination for knowledge that is readily producible to be emphasized and prized to a disproportionate degree, it is all the more necessary that the psychological relationships detailed above be known and taken into consideration.

2. THE ACQUISITION OF KNOWLEDGE

The *acquisition of knowledge* proceeds from either a solitary or a repetitive stimulus.

a. *Fixing in mind.* One may "fix in mind" the telephone number of an acquaintance, a strange name, a particular expression in a foreign language, from a single hearing or reading, without having to "learn" it. Usually knowledge acquired in this manner is of a *temporary*

sort;¹ it is a question of memory material that is used only in definite situations and afterward dropped; a single presentation suffices for such superficial retention.

A typical instance of this is the fixing in mind of the room number of a hotel at which one stops for a few days. The number is retained after hearing it the first time, but only as long as it is needed; soon after one's departure it is completely forgotten.

Knowledge that is lasting and more deeply anchored is acquired and remembered on a single presentation in exceptional cases only, and then only when there is especially great susceptibility for the material on the part of the person. Thus for example a person who is highly gifted and deeply interested along the line of mathematics may acquire for life, upon a single reception, a mathematical theorem or formula.

b. *Learning* is the acquiring of knowledge through repeated presentations. We previously came upon a more general, biological concept of learning (p. 190) where we were primarily concerned with the assimilation of new *skills* through repetition, and it was emphasized that this need not be attended by a volitional set for mnemonic acquisition. *Knowledge* may also be assimilated through *involuntary learning*. Those influences to which the individual is exposed with frequent repetitions produce in him without his consciously striving for them, lasting dispositions that function as knowledge on suitable occasions. At the very outset, in early periods of development (of the race and of the individual), during which the wealth of available knowledge is meager, and susceptibility for new impressions is almost unlimited, this involuntary learning forms the basic stratum of knowledge that is still entirely unsystematized and often vague and unclear, but that nevertheless furnishes the first rudimentary picture of the world in which the individual must feel at home.

The most impressive example of the astonishing ease of this primitive learning is the acquisition of his native language by a child from one to three years old. In this activity, all traces of intention to learn and of the expenditure of energy with this end in view are lacking, yet a result is attained which is incomparably greater than the effect of voluntarily learning a foreign language in later years. The same thing holds true at this early age for all learning; it occurs not as willed results but as incidental effects of other mental activities.²

¹ On the experimental investigation of rapid "immediate" recall see pp. 203 ff.

² "The child asks for little songs, not to learn them, but to hear them, and to take ever-new pleasure in the hearing; but all the same, at last he learns them. . . . In his walk he stops at every shop-window and expects all its glories to be pointed out and explained to him, not that he may know them to-morrow, or in a year's time, but now, at this moment; but he thus acquires lasting knowledge of the appearance, significance, and use of things. . . . In the child's consciousness there are but momentary joys and present interests, but above and beyond all intent, enduring future results are secured by an increased store of knowledge." (Stern, *Psychology of Early Childhood*, p. 226.)

Later as well, when there has been much voluntarily determined learning, involuntary learning nevertheless continues. Countless immigrants who did not know the language of their new country have learned it without taking special pains of any sort, simply because they devoted themselves to the business of life in the fixed milieu of that language. And they have acquired along with it countless items of knowledge about the country and the people, the customs and usages, in the same involuntary manner. This learning is to be ascribed to two causes. One lies in the external stimulus and its constant repetition. Impressions that are *inevitable* and perpetually renewed have a strong tendency to become mnemically effective—without the knowledge or desire of the person. It is not possible, however, to speak of an invariable tendency in this direction. Another cause is at work. This is the inner *susceptivity* of the person, which is greater for certain repeated impressions than for others.

Once again, then, we come upon that unconscious mnemonic selection by means of which involuntary learning differs from that voluntary learning which aims at completeness. Personal disposition selects out of the whole number those repeated stimuli that are especially relevant, in order to assimilate them and eventually to translate them into knowledge. The material really learned amounts, therefore, to a small fragment of the material available, while in voluntary learning, task and performance are more or less equal in scope.¹ Personal susceptibility may depend upon sex, age, constitution; it may rest upon the unique state of a given individual alone, in every case determining *which bit of the world* will be chosen for a mnemonic operation.

Several children play in the same street day after day; the same daily activities continually go on about them all, and yet the boys' unconscious learning selectivity extracts items of knowledge different from that of the girls; a four-year-old child learns something different from the eight-year-old, and the child interested in mechanics something different from one who is socially inclined.²

This selectivity for learning may also be *actively* supported without the intention to learn; under the pressure of impulses or interests one may seek out specific portions of the world, give oneself to them, and learn thereby.

¹ The pedagogical consequence must be suggested: wherever unconscious selectivity in learning is to be effective (and there is scarcely a pedagogical situation in which it does not assert itself at least side by side with voluntary learning), the pupil must be presented with *more* impressions than will take effect; only in this way can each individual hit upon the involuntary selectivity in learning that is suitable to himself. The child needs plenty of water to learn to swim. Cf. *Psychology of Early Childhood*, p. 227.

² Especially important are the investigations of Martha Muchow on the life-space of city children.

The *impulse to collect* may serve as an example. A person almost never takes to collecting pictures, stamps, coins, etc. from a will to learn, but is led by an immediate, often passionate, interest in the objects themselves and in possessing them. At the same time, however, collecting always has the *incidental didactic* effect of extending and deepening knowledge.

II. VOLUNTARY LEARNING

I. VOLUNTARY LEARNING AS A PERSONAL PERFORMANCE

Developmental progress occurs in the transition, as man matures, to *voluntary learning*. The *human race* makes corresponding progress in ascending from primitive culture, by differentiating work and leisure, by creating occupations that require definite knowledge, by establishing religious, racial, and cultural traditions into which every new generation must become inducted. The *individual* reaches the new stage on attaining what is called "school age," for then learning that is more than a purposeless byproduct becomes necessary for the first time, and it is systematized into definite tasks and objectives.

This important change in the make-up of the person is by no means limited to the narrow realm of mnemonic abilities and processes. As a matter of fact the entire person must participate through the functions of will, interest, feeling, and intelligence—always in an extensively organized and structured form, so that very advanced activity of the person is really involved.¹

a. *The will to learn.* Although the simpler forms of *will* are characterized by some goal having present reference, the *will to learn* has a goal that cannot be attained at the start through any single present act. Learning depends rather upon constantly repeated coincidence; it is only to one who strives toward repetition, that the goal, the future "being able," beckons. Thus many-sided, sustained volition is needed. To be sure, this is not as advanced as productive will, which must attain *various* intermediate objectives and connect these up with one another. An act of learning, though versatile, is relatively *monotonous*; the same material must be impressed again and again until repetition leads to its being stamped in.

But it is precisely this monotony that is the greatest hindrance to the *will to learn*. For although repetition is naturally pleasant, especially during childhood development, this easily degenerates into boredom when the frequency of repetition no longer takes place at the pleasure of the individual concerned, but at the behest of an objective task. Therefore where the *will* is undeveloped or constitu-

¹ This shows once more how artificial at bottom is any division of the personal unity into a number of mental functions.

tionally weak, the point of exhaustion or satiation, which makes the continuance of repetition impossible, is reached before the desired learning is accomplished.

Not only the frequency of the repetitions, however, but also their *organization*, exerts a strong influence upon the will. Voluntary learning is almost always bound up with specific times and lessons, especially in school where the pupil must memorize for the next day a prescribed list of words, a poem, a series of mathematical theorems; and even in the freer activity of learning by an adult who must divide up his total goal (the mastery of a foreign language, the perfecting of a part on the stage, the checking up on knowledge demanded by an examination) into numerous partial goals in order ultimately to become master of the whole.¹

b. *Interest.* It is therefore of great importance that in every case the essential self-discipline and self-restraint be made easier by bringing the will to learn into line with other directional dispositions. Learning in fields for which there is active interest, is easier and more productive than learning in fields toward which one is indifferent or unsympathetic.²

Interested learning combines the advantages of involuntary learning with those of a systematized will to learn; it is of all forms of learning the one most desirable. When it is strongest, internal cohesion with the material is so unqualified that complete *embedding* results. In this case the will to learn no longer works by bringing in foreign material but by subordinating the self to material that is near to the person; there is an extensive tendency to identify the self with the material that is to be possessed ("introception"). Such learning is the exact antithesis of mechanical "learning by heart," to which we shall later refer. The former rare mode of learning is to be found primarily among great reproductive artists, in whom it at times leads to well-nigh incredible feats of memory; thus many concert directors are able to conduct long orchestral selections entirely from memory. This could never be accomplished through mere memorizing of the score, but solely through "living into" the score.

A well-known actor, whom I once questioned regarding the way in which rôles are learned, replied with this paradoxical answer: "The real actor never learns his rôle. He submerges himself in it—and has it pat." Of course this statement is incorrect as a generalization. By far the majority of actors are compelled to memorize verbatim, and even for the greatest, introception is possible only with certain rôles that are "second nature" to them.

¹ In this instance, the will to learn has greater similarity to the "productive" will mentioned above.

² The statement of folk psychology "Memory is interest," contains at least part of the truth.

Very different from objective interest is the *formal* interest that kindles the will to learn and increases the product of learning. In all learning there is a *sporting element*; the ability that is to be won from the impulse of the will is prized as increased self-confidence; the time and the amount of learning may be measured in competitive situations.

The learner's emphasis on the dynamic factor which ultimately makes him indifferent to the objective content of the material is suggestive of athletics. There is an advantage in this, for the mental situation that soon blocks the material to be learned may become counteracted by the sporting interest. There are also disadvantageous effects; the lack of interest in the object may frequently persist after the material has been learned so that it is unable to make good its mental value.

Here is a consequence for education: Learning must above all be supported by the awakening of the *objective* interest. The *formal* or *sporting* interest through rivalry and ambition should be introduced only incidentally, when the objective interest alone is an insufficient incentive to the will to learn; e.g., in mastering the multiplication table; afterwards, at least in a supplementary way, the interest in the content of the material learned, must also be developed.

Finally, competition does not require other competitors, for one may compete *with oneself* in trying to surpass one's own performance. Evident among even those who are slow to learn is the dogged tendency to become adept with "dry" material, and thereby to prove that one is able to exercise effective self-discipline. Such overcompensation of inferiority may occasionally lead to important accomplishments in learning.

c. *Intelligence.* The part played by intelligence in learning is also important with respect to both form and content. Formal (organizational) planning must arrange and tie together the material in regard to aim, apportion the repetitions suitably, and select the most appropriate times of day. In general far too little thought is given to these necessities, and curiously enough, little training is offered in them.

For example, the school (which even in its most progressive forms will never be able to dispense with homework) is ordinarily but little concerned with *how* the pupils fix in mind the assigned words, dates, rules, theorems, etc. The children do not always discover by themselves that there is a *technique*, a judicious economy through which to conserve their energies and increase their output. Thus the utilization of the ideational type that the pupil represents may facilitate the task.

Older and more mature learners—senior high school and college students, young people who are being technically trained, etc.—are

naturally better able than children to organize the business of learning. Much more important than this, however, is the rôle of the *content* of thinking in learning, especially with linguistic material. The question is whether learning material is simply taken over in its sensory form and associative combinations (as a series of words), or whether *meaning* is also apprehended in learning. This distinction has been described by the expression "mechanical" and "judicial" memory. It will be shown later that there are intermediate points; at present only the extreme forms may be discussed.

With but few exceptions the material to be learned possesses not only substance, form, and grouping, but *meaning* as well; it *signifies* something; and it is precisely in the understanding and recognition of this meaning that the principal educational value consists. In many instances the meaning of the material cannot be separated from its substance as immediately perceived; no special feats of thinking are required for its comprehension. If an adult has for any reason to learn a simple quatrain in his native language it is not at all possible for him to fix the words in his mind independently of their meaning; the literal text is present for him only as the carrier of meaning.

In other cases, however, a separation occurs. Learning is then made more difficult by the *lack of comprehension of meaning*.

Examples: (1) A German learns a German rhyme of sixty syllables very rapidly, in from three to four readings. For an Hungarian poem of the same length and rhythm, the meaning of which is not understood, the German requires a greatly increased number of repetitions (tenfold according to Ebbinghaus) and expenditure of time.

(2) A pupil who *understands* a theorem in geometry is able to learn it much more easily and to reproduce it intelligently, than one who, lacking a thorough understanding of the meaning, must memorize the literal form as such.

(3) There is an intelligence test that assumes a feat of learning.¹ It consists of ten series of words, of three words each, e. g.:

Winnings—envy—boy
Disease—doctor—recovery
Robbery—prison—contempt, etc.

The series are presented several times with the injunction to fix them in mind. The experimenter tests the result of learning through the calling up of each triad by its initial word; the person undergoing the test must say the two words that belong with it. The outcome is revealing: Those subjects who have noticed and remembered immediately the connected meaning within each group, are later able to reproduce many more groups correctly than are those who had to depend only on

¹ The test has been published by the Leipziger Lehrerverein. It is also printed in Stern-Wiegmann, *Methodensammlung*, p. 31.

the auditory associations between the words because they did not perceive the meaningful relationship.

Thus the "meaning" is not another element newly added to the learning material that complicates the learning process. On the contrary it is a principle that organizes and structures the material. It also converges with the inner tendency of the learner, whose goal-direction favors meaningful activity while resisting meaningless and chaotic material. Meaningful learning, to be sure, requires a certain level of intelligence, at which meaning either gives the material its initial pertinence or invites discovery through conscious thought.

The latter possibility, *the gradual grasping of the meaning* during the process of learning (e.g., of an abstruse poem, of a mathematical relationship), has received little investigation. At the outset there is often merely a vague notion of the meaning, with the result that repetition serves not only to impress the text ever more firmly, but also to bring about the progressive clarification of its meaning. Even upon mastery of the material, thinking reveals additional items of meaning that had not previously been noticed. In such "judicial" learning, the learning process does not reduce to a monotonous succession of stereotypes, but forms a series of phases that are quite unlike qualitatively. At one time the consciousness of increasing certainty of mastery predominates, and at another, the more profound assimilation of the meaningful content.

In the light of these facts, we must criticize the abrupt demarcation of "mechanical" from "judicial" learning. For at certain stages of development a wholly vague comprehension of meaning is often the only possible condition, but it is by no means so alien to the person as the catchword "mechanical" appears to imply.

Example: Our four-year-old daughter had unintentionally learned, along with her older sister who was of school age, a long German poem, the meaning of which was naturally far over the child's head. Nevertheless the poem had a meaning for the younger child, even though this was different, more "vital," and less intellectual, than for higher stages of development. To this child the "meaning" of the poem was primarily her joy in the patterns of sound and rhythm, certain dimly comprehended individual words and passages, and the social pleasure in being able to recite in unison.

Therefore each individual case of learning involves only that meaning which is accessible to or *demanded* by the learner. But if this rudimentary meaning is not achieved and if the learning is therefore confined to a purely external assimilation of the material and its associative connections, the designation *mechanical* is appropriate.

A person learns mechanically, who though intelligent enough to

understand the meaning, is not sufficiently interested to devote trouble and the energy to it. That individual also learns mechanically in whom material arouses no meaningful resonance in his personality. Lastly, the requirement—often imposed in instruction—that the text be fixed in mind *literally*, may result in mechanical learning, since regard for meaning is easily diverted by the strict attention to the fixed sound of the words.

2. EXPERIMENTAL INVESTIGATIONS

a. Problems and methods. The ground is now cleared for a treatment of the results obtained in the field of *mechanical memorizing* by experimental psychology, especially through Ebbinghaus, G. E. Müller, and their followers.

It was no accident that exact work in the psychology of memory began in this domain with nonsense syllables, and not with the learning of meaningful material. This was, of course, partly due to methodology; meaningless material was especially susceptible to comparison and variation in combination (see pp. 58 ff.). But there was also another and deeper reason; it was believed possible to discover by this method precisely those conditions of learning that were basic to the material and to the principle of association. As an actively participating factor that contributed meaning, the person was excluded. At bottom the procedure was thus an experimental application of British and Herbartian associationism. Though we now view the investigation in a quite different light, it is not on that account without value.

Memorizing that is completely independent of the person is inconceivable. But since the learning process may be embedded in the person to greatly varying degrees, those kinds of learning that are embedded the least offer the most likelihood of clarifying the relative influence of non-personal conditions. Actually, of course, the learning process proceeds from the convergence of these non-personal conditions with the personal conditions of learning that have just been discussed.

The majority of the experimental investigations used series of nonsense syllables; series of numbers, of unconnected words, and of pictures, were also occasionally employed.

The methods of procedure are as follows: With the "method of complete mastery" the subject reads the series to be learned as many times as are required for "knowing" it. In the "method of savings" a series that has previously been learned but subsequently forgotten is relearned after an interval; the smaller the number of repetitions necessary, the greater the effect of the original learning. In the "method of right associates" the learning process is interrupted before the series is completely mastered, and the partial learning is determined by having one term call up the next. In the "method of prompting" the incomplete

process of learning a series is supplemented by prompting; the amount of prompting required indicates the degree of incompleteness of the learning.

b. The scope of learning material. If, disregarding meaningfulness, the attention is directed merely to the total of the items to be impressed, the task of learning naturally increases with the length of the series, though in a disproportionate way.¹ If, for example, a single reading suffices for a normal adult to learn a series containing six members, a series containing twelve members requires not just two repetitions, but ten to twelve; and a series containing twenty-four members takes more than double the number required for twelve, or forty-four readings. In this direction an upper limit is rapidly reached; very lengthy material can no longer be mastered at all by repeated reading of the whole, no matter how greatly the number of readings is increased. In such cases "fractioning" becomes necessary, that is, the breaking up of the material into segments that must be learned separately.

The scope of learning material naturally depends also on the scope of the single members, but it is noteworthy that within definite limits the latter has no essential influence on the difficulty of learning. A series containing eight members, that consists of unconnected words, gives scarcely more trouble than a series consisting of eight digits or letters, although the first is composed of material having a far greater aggregate length. It is consequently not the objective quantity of "elements" but the *unitary groups* in learning, that provide the natural segments of the series.

Such unitary groups that appreciably lighten the task of learning, are also possible with utterly meaningless learning material, and are indeed difficult to avoid. Contiguous items readily form into "complexes"; these are fixed in mind as unitary Gestalten of sound and rhythm, and are so reproduced. The manner of presenting the material may naturally greatly enhance the formation of such complexes. *The series as a whole* also forms a complex structure, the different members of which take on a greater or lesser degree of predominance when it is being learned, *according to their position in the series*. Thus in general the initial and final members of a series are mastered much sooner than the intermediate members.

c. "Fractioning." If a lengthy poem is to be learned overnight, there are two possibilities. The learner may read the entire piece through repeatedly from beginning to end until he knows it ("whole method"). Or else he *fraction*s it, first learning through several repetitions, say, the first four lines as a group, then the next four lines,

¹ For the corresponding law for immediate recall see p. 203.

etc., ultimately putting together the whole, when learned, as a complete poem ("part method"). Pupils to whom the choice of methods is given choose the part method almost universally.

It has been found, however, from experimental tests that *fractional learning is uneconomical*, both for meaningful and nonsense material, in memorizing as well as reproduction. With the whole method the learner was able to memorize given material more quickly than material of the same length and difficulty that he learned by the part method. When both samples were forgotten after a brief interval and the method of saving was used the re-acquisition of what had been learned as a whole required fewer repetitions than that learned fractionally.

In explanation of this fact a principle of *associationistic* psychology is often invoked. If a poem is learned fractionally by beginning with numerous repeated readings of the first four lines, the repeated succession of the last word of the *fourth* line by the first word of the *first* line forms an association that is *wrong*; it must later be broken and replaced by the association of the last word of the fourth line with the first word of the fifth line, and similarly at the other breaks. In consequence the work of learning is in part unfruitful. With the whole method, on the contrary, every portion of the poem will be associated from the beginning in only the proper sequence with the adjacent portions.—But the *point of view of totality* has greater explanatory weight. Fractioning tears asunder the natural unity of the learning material, and hence weakens the aids to learning that proceed from the total pattern of sound and rhythm and from the unbroken meaningful relationship.¹

But is this experimental finding adapted to practice in, for example, the home memorizing of school children? Two psychological doubts may be raised in this connection.

In the first place the pupil is affected by certain *emotional* conditions of learning that may complicate those imposed by the material. If, on commencing the total task of learning, the pupil is confronted with a poem of forty lines, he is frightened by its extent. He therefore goes to work bit by bit and is more quickly successful with parts that give him courage to proceed. Moreover it is less monotonous to learn the beginning in the first ten minutes of learning, the middle in the second ten minutes, and the end of the poem in the third, than to take up the whole time with the same thing, namely, the entire poem.

In the second place, all learning material—the meaningful to a far greater degree than the unmeaning—contains many places of *varying* difficulty. Places that are especially hard to take in require extra effort in learning; it would therefore be very impractical to have to reel off

¹ "Getting stuck" in reciting poems is in fact most frequent at the breaks where interruption in thought occurs.

portions already mastered along with the whole piece each time, because of a few lines (or passages in a piece of music) that had not yet been mastered.

Thus, as Meumann pointed out thirty years ago the following technique should be regarded as the most suitable: New memory material is first of all learned superficially in its entirety. A certain general familiarity is thereby acquired, which fixes the unitary bounds of the pattern of the poem and its meaningful relationship. At the same time the stubborn places are singled out and are fixed in mind separately by part learning alone. Then that which has been learned in part is joined by several readings of the whole, so that separation of the parts learned in isolation will be avoided.

d. Distribution of repetitions. In an earlier place (p. 191) we mentioned the general mnemonic law, that in pursuing a lengthy series of repetitions of the same material, mnemonic susceptibility gradually diminishes; finally further repetitions are of no added value whatever. As we saw, this diminishing effect of repetition represents a kind of self-protection for the person against becoming overburdened with a one-sided task; ceaseless toiling with the same material eventually proves senseless.

Experimental investigations have shown, however, that this law holds only with immediate sequences of repetitions. A definite number of repetitions in no way betokens any constant total mnemonic effect; on the contrary, the effect is greater according as the mnemonic stimuli are more distributed in time ("Jost's law"). If I memorize a poem by reading it thirty times in succession, the impressive value is disproportionately smaller than if I had read the poem through five times each day on six successive days.

It goes without saying that Jost's law is limited; if I read the poem through only once a month I should not know it even after thirty months. It is therefore more correct to formulate the law as follows: *For any number of repetitions devoted to a task of memorizing, there is an optimal effect that is dependent upon the spread of distribution.*

Jost's law is of practical significance, for it bespeaks the possibility of utilizing the energy and time available for any task of memory in a more or a less economical manner. On this account, in any field involving repetitive learning and exercise, in school, in vocational learning, in athletics, in preparing for examinations, repetitions and intervals should be distributed in a way that is advantageous to the group and also so as to make them of optimal value to the individual.

e. The rate of learning. Learning material may be read through at a slow, medium, or rapid rate. Ebbinghaus, who compared the different speeds in learning poems, found that the most rapid rate of

reading possible for him (200 iambs a minute) gave the best results, both as to the total time of learning and the retention of the impression after a week.

But here too a distinction must be made between maximal performance and *optimal* procedure. There are of course situations in which learning takes place as rapidly as possible (Ebbinghaus speaks of pupils who made up their neglected homework hastily in the few minutes of recess); it has been proved by experiment that such performance under necessity may yield wholly satisfactory results—at least for the moment. But in strict regard to the problematical lasting effect as well as the personal inadequacy of such forced activity, no method is recommended by the experimental findings. Undue speed either is bound to lead to a very disorderly impressing of the material, as if only the learner's outer mental coat were stripped, or else it demands an unnatural straining on the part of the learner that is justifiable only in exceptional cases. The choice of the rate of learning should and must be left largely to the learner. This rate depends closely upon his personal tempo; consequently each individual discovers with considerable acumen the optimal rate of learning for himself.

Furthermore this individual rate of learning involves not only the speed of reading, but also the level of aspiration which the learner sets for himself. The former stops with memorizing as soon as success is attained in reciting without the book. The latter is brought about only through numerous repetitions and constant checking (by occasionally looking at the book to see if the recitation agrees with the text). The slow learner is at once a more thorough and critical—though often a more pedantic—learner than the rapid learner; the difference is in part characterological.¹ While the rapid learner may surpass the other in short-term retention, in the long run the work of the slow learner is usually more comprehensive.

III. RETENTION AND FORGETTING OF KNOWLEDGE

I. THE LOSS OF LEARNING

As soon as anything has been definitely fixed in mind, the *reverse* process sets in, which diminishes the newly attained advance and finally reduces it almost to zero.

This *loss of learning* is manifested in various ways. Individual portions of learning material become faded, vague, and unstable (loss of clearness). The connections between items begin to decay, and gradually disintegrate until finally they no longer hold the material together at all (disintegration). The dynamic dispositions

¹ See Külpe's *Vorlesungen über Psychologie*, pp. 208 ff.

produced by the primary act of learning become so weakened that relearning of what has been half forgotten requires a constantly increasing expenditure of time and energy (loss of exercise). Increased voluntary effort to remember is necessary for recalling what has been learned (loss of certainty). And even the subtle results of learning, its deposit of cultivation and life experience, gradually become less effective (loss of effect).

Popular psychology lumps all these varied phenomena of loss together under the designation of *forgetting*; but it is necessary to keep the several aspects separate. In general only the first two phenomena, which affect *reproduction*, are noticed, and forgetting is regarded as complete when the content and connection of what has been learned can no longer be recovered. Two considerations are thereby overlooked; even the impossibility of reproducing the material at a certain time does not exclude reproducibility in advanced age; and embedded effects may be continued though reproduction has long been impossible.

We have already discussed these last effects in part (see p. 211); we showed that the chief value of "individual cultivation" consists in the very fact that what was previously learned is *not* lost even though it may no longer be directly reproduced. Indeed, the proposition "*non scholae discimus, sed vitae*" would be nothing but sham if it claimed that everything that we learn must be reproducible throughout life. It has meaning only if we count the effects of bound memory. The learning, while a student, of numerous poems, Greek irregular verbs, etc., does not simply vanish from one's being because one "knows" nothing of them decades afterwards; *having known* them contributes to the permanent intellectual make-up of the personality.

The *personal* significance of forgetting appears at first to be purely negative, as is indicated by the word "loss." The individual continues to feel that "forgetfulness" is especially annoying, an indication even of human imperfection; this feeling of inadequacy is heightened by the thought of the expenditure of energy that he devoted "in vain" to the task of learning during the best years of his development.

That it was not "in vain" in any complete sense, we have already observed. Moreover, forgetting has immediate *positive* value; the loss of knowledge may mean *unburdening*. The various periods of life *demand* different knowledge at different times, and on that account the always limited energy must from time to time lose those clusters of knowledge that have no reference to the demands of life. We previously mentioned the typical "walking encyclopaedia" who can "forget" nothing and who consequently is unable either to embed his knowledge in the deeper stratum of his life or to release his energies for creative activities.

Such a consideration is of course not intended to minimize the unwelcome consequences of forgetting. But it should be emphasized that forgetting has double significance.

2. EXPERIMENTAL STUDIES

Experiments on the loss of learning have yielded a *basic principle* that is thwarted here and there by secondary conditions. The principle is: The longer the period which elapses after learning, the greater the forgetting; and in fact, the curve of forgetting rises very rapidly immediately after learning, thereafter gradually more slowly, and finally approaches an asymptote.

Ebbinghaus established the law for the loss of exercise; it was one of the earliest results in the experimental psychology of memory. For the sake of simplicity we shall give his findings in a modified form.

Let us assume that it took thirty repetitions to memorize a series of nonsense syllables of a definite length. If a series thus learned (and forgotten immediately) is memorized anew after twenty minutes, twelve more readings are now needed. If a similar test is made with another series of the same length, but with an interval of 24 hours, relearning requires twenty repetitions, etc. On each trial the "loss of exercise" can be measured by the fraction of the original work of learning that must be devoted to relearning.

Series of syllables that require thirty readings for learning the first time require for relearning:

	<i>After 20 Minutes</i>	<i>After 1 Hour</i>	<i>After 9 Hours</i>	<i>After 1 Day</i>	<i>After 6 Days</i>	<i>After 1 Month</i>
Readings required	12	17	19	20	23	24
New effort required as per cent of original effort ("loss of exercise")	40%	57%	63%	67%	73%	80%

That a loss of 100 per cent, or the complete removal of all after-effect, does not occur, even with long latent periods, is shown by another of Ebbinghaus' experiments. In his youth he had learned a succession of stanzas of Byron, and he had not seen them afterwards, nor even thought of them. When he undertook to relearn them *after 22 years* they seemed entirely strange to him; he lacked all remembrance of them, and could not even recognize them. But an *effect of exercise*

of about 7 per cent was nevertheless found, on comparison with other stanzas of the same difficulty but not previously learned.

Wessely tested the amount of falling off in *reproducibility* during a latent period of one year for pupils of various ages. Poems were selected that had been learned a year previously and not repeated since; the pupils wrote down as much of the text as they still remembered, including the smallest fragments. The result was extremely telling for the "*vitae discere*" mentioned above. The poems proved to be not even a possession of a year, let alone a "possession for life." The loss in memory was the least for pupils in the seventh grade, who could still reproduce on the average 85 per cent of their poem. For the fifth grade the amount retained was only 42 per cent, and for the tenth grade but 37 per cent. This result also reveals the genetic fact that the *peak in memorizing occurs at the age of twelve to thirteen*. With younger children the capacity to memorize is not completely developed; with older children it lags behind other functions, especially the ability to elaborate the material intellectually.

3. REPRODUCTION

How does the reproduction of previously acquired knowledge occur at a given time?

a. *Freely rising ideas.* The mnemonic disposition that remains latent in the individual may continue to develop and undergo such inner strengthening that it operates spontaneously; the idea develops from the simple set. Everybody knows these so-called "*freely rising ideas*"; scenes, verses, melodies that suddenly strike one without having been preceded by any associative motive or active search. In fact, no sufficient cause for this reproduction of older knowledge is demonstrable in *consciousness*. Associationistic psychology had therefore to seize upon the suggestion that unconscious ideas must have intervened between the earlier and the present conscious ideas.

b. *Single and multiple reproduction.* When series of ideas are very firmly fixed in mind a single impulse (naming one item) suffices to set off the whole chain without omissions or errors. The catchword only need be picked up (e.g., 1 times 7 = 7; or a, b, c, . . . ; or "Four-score and seven years ago . . ."). The reproductions that follow are set (purely "associatively") of themselves.

While such series are highly mechanical, there is a limit to their readiness; they may be reproduced only *in a single direction*, beginning with the first item. As implements of knowledge they lack versatility and flexibility. This may extend to the point where a pupil can answer to the question "five times seven?" only after he has reproduced privately the entire series from "one times seven" on.

Multiple readiness for reproduction rests in part on the fact that if in learning, the single item of knowledge has been placed by exercise

in a variety of relationships (e.g., the multiplication table out of order), such items have become more deeply embedded in the intellectual relationships of the person. They are then ready to be called up in specialized connections.

c. *Active recall.*¹ A different psychological picture results whenever the readiness to reproduce does not in itself satisfy the requirements of the situation. The reproduction of knowledge is demanded (e.g., at school, in tests, etc.), but the idea comes neither in the associative way nor spontaneously from a set. It must first be prepared for reproduction through *active* delving into the mnemonic process. This activity of seeking and pondering is possible only on a relatively high level of human development. It involves both a concentrated voluntary set toward the goal, and the utilizing of auxiliary intellectual means, which close in more and more upon the desired idea, until one "has" it. *Whoever has to recollect actively must be able to will as well as think*, which is why it is so difficult for many to make their knowledge available at the instant it is required.

In such cases it does no good to command the pupil to "remember." He would like to do that himself, but he does not know how it is to be done. Sound pedagogical guidance may be given, and exercise in recollection may be gained, through constructive encouragement of reflection and persistence.

A *jamming* of the process of recall occurs now and then as a peculiar complication. Voluntary effort leads one very close to the desired idea ("the word is on the tip of my tongue"), but at the same time inhibits the participation of other spontaneous sets, and thereby prevents recall. It often happens that a little while afterwards, when the person is occupied with other matters, the name previously sought, the forgotten formula, etc., suddenly intrudes. After the inhibiting effect of the effort to recollect has ceased, the preparatory work done by it yields its belated returns.

¹ *Sich besinnen.*

CHAPTER XIV

REMEMBRANCE

I. GENERAL VIEW

I. THE NATURE OF REMEMBRANCE

Remembrance¹ is distinguished from all other mnemonic phenomena in that it represents not merely some effect of the past upon the present, but a *reaching back into the past* from the present. Within it the personal order of time is simply reversed; the course of life does not move steadily onward but turns backward upon its own past; on this account the significance of remembrance for the individual is similar to historical tradition for a nation or tribe. The subject (individual or nation) experiences himself as having always *become* something, and experiences the past as belonging to this process and thereby to his own self.

On this level the present is not the sole domain of experience (as for animals); the past is not only the source of power from which the present at any given time is mnemically fed, it is also a phase of life acknowledged by the present and continually experienced anew.

The meaning of remembrance is determined by the two dimensions of Person-World and Past-Present.

Remembrance is the history of the person and his world as experienced. The history of the person unfolds in intimate commerce with the history of the world that immediately surrounds him; his own progress and metamorphoses combine with external events and situations in such a way as to give the life-course of the person its concrete form and to give content to its remembrance. In all naïve remembrance, therefore, remembrance of *self* and remembrance of the *world* are not differentiated, and even the attempt to distinguish them by critical self-reflection never yields altogether pure recollection of the objective past nor of the past of the self. *Tempora mutantur et nos mutamur cum illis.* Nevertheless the prevailing tendency toward *world* or *self* is decisive for the function of remembrance in any concrete instance.

¹ According to Warren (*Dictionary of Psychology*, p. 230) the word "remembrance" is considered in English terminology a "loose term" little used in science; this is also true of the corresponding German word *Erinnerung*. The term is used in this book exclusively as defined in the text.

On this account objectifying and subjectifying remembrance will be dealt with separately.

The second dimension connects the two temporal phases. I "now" have a remembrance of "then"; that is, the past is taken over into the present. This is possible only because both belong to the uninterrupted life-course of the same identical person and thus stand in a continuous relationship to each other. I am the *same one* who *now* remembers what I *then* experienced (*mnemonic continuity*). For all that, however, the "then" is something *different* from the "now" not only because it pertains to a different period of life in point of time, but also because its content is more or less clearly divergent from what now fills my life, that is, because I myself have changed.

This factor of difference may develop into manifest inconsistency and eventuate in an uncanny strangeness: "I can hardly realize that I am the one who once had that experience" (*mnemonic cleavage*). These two characteristics of continuity and cleavage may be established in very diverse ways and consequently continue to impart varied personal significance to remembrance.

The polarity of past and present is also a matter of different mental modalities. The primary operation in the past was some *perception* (of the self or an object); in remembrance, what was once perceived is revived as an *image*. How are the two related to each other? We have already rejected the "trace theory," according to which the remembrance is a regular and conformable reiteration of the original perception.¹ Every memory image is a new mental property of the person as he *now* is (at the instant of remembering), and is determined and colored by his present total condition. While *the same state or object is intended* that once occasioned the perception, it is dissimilar to the perception and therefore does not represent the original object in the same manner as the perception did when it occurred.

This gives rise to *memory illusions*. They play an even greater part than sensory illusions. For while in the majority of cases the latter may be exposed and corrected by various controlling agencies, memory illusions are really shown up only in exceptional instances, and in general lead an unrecognized but highly active existence.

Every remembrance is *temporalized*, that is, fixed in relation to some *position* in the personal past. This "sometime-index"² oscillates between the highly vague "once upon a time" and the quite precise "that time." Many remembrances are simply experienced as belonging to the misty past, when there is no possibility or necessity for referring them to a more exact position in time. Like the "once upon a

¹ Pp. 193, 215.

² This concept is similar to the consciousness of *space*; spatial items always have a "somewhere-index." The term "localization" is much more common for this than is the corresponding expression for indicating temporal position, "temporalization."

time" of stories or fairy tales they lack chronological precision. Other remembrances are clearly temporalized within the personal time-span: "I heard the pianist X play during my stay in N." Finally this individualized past may become projected into measurable objective time: "I remember my stay in N. in January, 1925."

When the individual acquires the ability to temporalize sharply, he has emerged from his personal fairy-tale period and entered the phase of true personal historicity, becoming a participant in objective chronology.

2. THE DEVELOPMENT OF REMEMBRANCE

Developmental psychology must commence with *absence of remembrance* ("amnesia"). There is a wholly normal amnesia of infancy, for, of all forms of mnemonic capacity, that of remembrance develops latest. An infant of fifteen months who can recognize persons, has acquired certain habits, and possesses and applies certain items of knowledge (and thus functions mnemically in several ways) does not yet *know* anything of his past and therefore cannot consciously refer memorial representations to earlier experiences. The first traces of true remembrance must be assigned to about the age level of eighteen months; but even at that age it is chiefly a question of isolated, fitful gleams that flare up indistinctly and are quickly extinguished from the otherwise undifferentiated misty past which lies behind the child. It is some time before a more adequate process of remembrance develops, and considerably longer still before the individual is capable of viewing his previous life as a continuous whole.¹

Later amnesias in normal mental activity are distinguished from the amnesia of infancy by abstract *knowledge* of a portion of past existence where there is no longer any consciousness of its content (either in the form of vague impressions or of ideas). This holds universally for recollections of infancy. Everyone *knows the fact* that he was once an infant, but is no longer capable of remembering that period.² A similar bare knowledge of the past is also fundamental to other periods of life when these are not direct objects of remembrance; when they become so, this mode of experience is converted to memorial feelings or ideas at a higher level. Frequently, however, this content-giving process cannot be brought about in spite of every effort. One may know that years before one spent a few months in a certain place, and may even be able to determine particulars from indirect sources like letters, notes in diaries, and the accounts of relatives, but even this assistance is not able to revive the atmosphere

¹ Numerous examples and theoretical discussions of the earliest development of the capacity for remembering may be found in C. and W. Stern, *Erinnerung*, etc.

² On adult remembrance of infancy, cf. Reichardt.

or any intimate impressions of the sojourn. To such a person, that portion of his own life is no different from the activities of a stranger that he reconstructs from historical sources.

To be sure, such amnesia cannot be described as irrevocable, for it depends upon the personal situation, disposition, and life phase at the time at which remembrance is sought. Thus in the prime of life extensive amnesia for childhood occurs quite normally, but as the individual grows older, his aging personal structure may again approximate that of childhood, and then childhood itself becomes subject once more to remembrance, and under certain circumstances vividly so.

Pathological amnesias that occur in combination with general mental troubles or some accident are clearly distinguishable from the normal kind; they ordinarily extend to just those events and segments of life that are normally highly susceptible to remembrance; that is, to circumstances that are not at all remote and are extremely important. Even bare knowledge of the period that cannot be remembered is frequently lacking. Thus a widow who is mentally deranged may have no remembrance of the ten years of her widowhood, and believe her husband to be still alive. Very remarkable is "retrograde amnesia" occurring after a serious accident, which pertains to the events immediately preceding it. An old man is run over on the way home from work and seriously injured. When he recovers consciousness he can still remember the day at the office but not his departure and course through the streets. Even later on this interval remains lost. The shock prevents any smooth transition from the experience (the "time fringe"¹) which in normal circumstances would establish it as a mnemonic stimulus.

Amnesia is failure of remembrance, but not absence of mnemonic effects. Mnemonic stimuli have other possible effects that need not be destroyed, even when remembrance can no longer be aroused. A mentally deranged author whom I saw years ago in an institution had total amnesia for the years immediately preceding; he spoke of Bismarck, who had not been in office for a long time, as the chancellor in power, etc. But that the interval had nevertheless not been simply blotted from his mneme, was evinced among other things by the fact that he could write shorthand, which he had learned during the forgotten period, with undiminished skill.

After bare abstract knowledge of past existence we must next consider possession of the past by way of *feeling*. Because of their fluidity and indistinct contours retrospective feelings² are adapted to bringing to consciousness the *continuity* of our past life. When we recall or relive a mood of our childhood, adolescence, or student days, our remembrance does not resolve itself into single pictures, but has the character of indefinite extent with little internal organization or distinctness of contour. And even when single events of bygone days

¹ See p. 200.

² See p. 564.

become salient as *memorial representations*, this mood persists as a background. It is with memorial representations that the highest stage of this development is reached.

Such representations always comprise a meager selection from the vast abundance of primary experiences. They constitute the crystallization, on the one hand, of high spots, milestones, particulars of the past; and on the other, of constantly recurring events of an earlier period that became familiar components of the leading trend of life.

Try to re-present your school days. The first and the last days of school, school celebrations, examinations, etc., arise at once, but so in a vaguer way do a loved or hated teacher with his typical mannerisms and ways of speech, the constant anxiety over the result of written work, the atmosphere of a particular class. Representations of the latter kind are more deeply embedded, in the more primitive form of purely sentimental remembrance, and are therefore harder to temporalize and pictorialize.

II. THE SUBJECT-REFERENCE OF REMEMBRANCE¹

The phases of the past that an individual remembers as dividing up and marking off his life are never bare recordings for him, but are also factors of his present self-consciousness and of his strivings into the future. In consequence, whatever an individual has for a "past" is not fixed and the same once and for all; it changes constantly with the progress of life and with changing needs and purposes. Thus for one who has just arrived at puberty, childhood plays a quite different rôle in personal history (it is contemptuously repudiated) than for the adult (it is largely a matter of indifference) or for the old man (it comes closer again and acquires a renewed sentimental value). Thus, viewed personalistically, *the past is plastic*, and it determines the selection and structure of isolated remembrances.

I. CONTINUITY AND CLEAVAGE

Certain phases of the past are experienced as still pertaining *in toto* organically to the present and the near future; in these remembrances a broader present reaches out far beyond the mere momentary "now." It is primarily the most recent past events, "just now" and "yesterday," that contribute to the consciousness of "today," and anticipate "tomorrow." But the less recent may receive this emphasis of *continuity*, while that which lies in between may be alien or contradictory. Personal time is much more irregular and irrational than unidimensional objective time; thus a segment of life that is ten years behind me, may be far nearer to me subjectively than the period two

¹ This problem is dealt with in my monograph *Personalistik der Erinnerung*.

years ago. Or *vice versa*, some act that I did yesterday may today appear incomprehensible to me, as a foreign element in the otherwise continuously unfolding past.

While mnemonic continuity deals chiefly with every day uniformities and trivialities, it is *cleavage* in remembrance that gives human life a truly historical character. To our awareness, life is identical *in spite of constant change*, in spite of far-reaching shifts and catastrophes. In pathological cases the consciousness of the strangeness of one's own past may become so strong that no connection whatever with the present can any longer be achieved; then the meaningful course of the personality is disrupted. But in normal life mnemonic cleavage plays a highly significant *positive* part. Consciousness of personal unity, which forms the foundation, acquires tensions in enlarging its scope. The individual's remembrance must go beyond simply observing and accepting the difference between past and present circumstances. Therefore he must become capable of incorporating the one in the other.

We proceed to the typical forms in which such *incorporation of remembrance that has undergone cleavage* occurs.

Where the present is relatively empty of immediate experience and possible activation, remembrance of earlier—better, and irrevocably lost—times, becomes a *surrogate of life*. In general, living in the past is possible only for people who are old and incurably ill, for the retired and for those leading a frustrated existence. When an aged, rheumatic sailor meditates on his former adventurous voyages, when a pensioned statesman writes his memoirs, when a convict serving a life sentence tries to depict his carefree childhood, life that threatens to become devoid of content takes on new content in some respect. It is, to be sure, a content that is merely the echo of experience and no longer life itself. But the consciousness of retaining an inward grip on one's former life, of having experienced largely, and of reviewing one's own long past—all this may not only be enjoyable, but also give a new impetus to one's sense of competence. The effectiveness of remembrance is heightened through not living solely in oneself, and by finding a public for one's memoirs. Then life even regains a direct goal in new social resonance.

The cleavage of remembrance also enables the past to become salient against the present, not because of its brightness but by reason of its *gloom*. The person often evades the dark spots of his former life, forgetting or repressing them. But this state of affairs does not continue; such events may be brought back into consciousness with the aid of artificial methods (psychoanalysis) or by one's own volition. Or in many instances they remain fixed from the beginning as conscious items of remembrance. The effect on the person of such unhappy

remembrances depends upon *contrast*. Contrast is different from simple cleavage; it is the mutual antagonism of opposite poles so that they represent a common higher unity. Thus the remembrance of averted danger is capable of heightening a present sense of security. The self-made man cherishes his remembrance of the miserable beginnings of his career, and so makes his present good fortune all the more enjoyable. Even a five-year-old child will speak slightly of the time "when I was still a baby" and will recall with satisfaction that former state of imperfection.

Such contrast effects become more complicated and more deeply rooted in the personal structure when it is a question of remembering moral infractions. The *sense of sin* may vary from occasional touches of remorse to habitual self-reproach, and it is not restricted to actual commissions, but may involve worry over mere impulses. In terms of pure personal continuity, the guilt-stricken individual is the *same one* who thought, wished, or did the deed. He thus undermines the ground on which his personal existence rests, and the agony of his remembrance of sin may even under some circumstances impel him to suicide. Normally, however, *distance* from his past is included in the experience: he looks back upon it from an outside point of view, weighs it, frees himself inwardly from it and from the implied responsibility, or at least evinces the desire for such liberation. Thus in feelings of remorse and regret the cleavage between "then" and "now" is both deflated and overcome. Here too contrast effect is not lacking; as a repentent sinner the person is of greater worth in the sight not alone of God but of himself, than someone of a thousand virtues.

2. ALTERED AND MYTHICAL REMEMBRANCE

The function of remembrance, to preserve the individual's past *in the most appropriate form for him*, necessarily removes the *content* of remembrance to a greater or lesser distance from the original experience. Indifferent material is thrown off, unpleasant material altered, the unclear and the confused is simplified to sharp delineation, the banal is raised to the rank of the unusual; ultimately a new total picture is formed without any conscious desire to falsify it.

This subjective transformation of remembrance proceeds by *labilization* and by *stabilization*. Since personal needs that are served by remembrance are subject to manifold changes, an object of remembrance may also participate in this change. It thus becomes *labile*.

Example: X and Y were friends. During the period of this friendship X's remembrances of common experiences and of the actions and

attitudes of Y were colored by strong sympathetic feelings; they took on forms that permitted the friend to appear in the best light, and thereby justified the friendship. Then a breach occurred. The new feeling of hostility now not only allows X to think with bitterness of their common experiences, but influences the actual content of remembrance. The black and the white are reapportioned; remembered words acquire a different import, and actions a different motivation. What was once ignored now becomes significant, what was formerly emphasized is now repressed; and finally that portion of the past takes on a color and form that correspond to the reversed attitude of X toward Y.

But beneath these transformed needs that make remembrance labile, there is another tendency in every individual; the demand for a firm foundation in the past that will support all future changes. It is also the function of remembrance to lay this foundation. The *stabilization* that it provides encrusts the original experiences; the fluid mass gradually solidifies into a fixed deposit ("the old home," "school days," "marriage"). Remembrance becomes *personal mythology*.¹

This myth-forming tendency is particularly evident in the remembrance of a dead loved one. The impossibility of modifying the remembrance through new experience and the irreparability of the loss contribute to the fixity of memory.

A wife who has lost her husband during youth after a few months of married bliss may live for half a century solely in the remembrance of that brief period; her entire existence is caught up in those images that are to her personally genuine remembrances, although scarcely a single feature of the picture may bear any resemblance to the actual past situation.

In this connection adults' childhood remembrances acquire new meaning. In the mythical remembrance of the old home, parents and grandparents, that primitive relationship becomes consciously symbolized which places the individual outside the confines of his own existence, and in the succession of generations. The boundary between childhood remembrance and ancestor worship is unstable.

III. THE OBJECT-REFERENCE OF REMEMBRANCE

I. THE ACCURACY OF REMEMBRANCE AND ITS INVESTIGATION

Remembrance assumes a new aspect when its *objectifying function* is considered. The past represented in remembrance is not solely that of the subject, but also that of the surrounding world; this world is trans-personal. Its existence has fixity, univocality, and reality

¹ Here we find a further similarity between remembrance and history at large. In the history of peoples, myths continue to be shaped by persisting myth-producing forces.

that the individual must acknowledge. *The facts command respect even when they are of the past*, for upon them are based present practices that affect the world, and they form the *common* fundament from which socialized life and all true historical knowledge issue. The individual must be able to remember adequately the tasks he has undertaken; an unbounded personal mythology would render him a useless member of society.

We demand of the writer of memoirs that reality be visible through the subjective coloring of his portrayal. The witness in court must depict the event "as it actually happened," apart from the individual wishes, partisan attitudes, defense mechanisms, etc., that color the content of the remembrance.

There thus arises the psychological question of the nature and degree of correspondence between remembrance and actuality, or in other words, that of *accurate and deceptive* remembrance.¹ Modern psychology has devoted considerable experimental, descriptive, and theoretical work to these problems; the results have led to manifold practical applications, especially in the administration of justice. The designation "*psychology of Aussage (testimony)*" is commonly used for this entire branch of investigation.

Aussage experiments have developed in two principal forms. The most widespread is based on *picture tests*. The person being tested is shown a picture on the contents of which he must report from memory immediately after looking at it or after an interval. The experimenter can then compare the report with the picture item by item and determine precisely any omissions, additions, and substitutions.²

Pictures offer the advantage of being always available for presentation, but their disadvantage is that the experimental conditions are very remote from every day life, which usually involves ephemeral happenings. Therefore situations close to life ("reality experiments") have also been developed. In these some incident is enacted, e.g., a fight with angry words and physical aggression. Each word, each bit of action, and the entire sequence are exactly determined upon and learned by the actors beforehand. The spectators usually do not know that it is an imaginary episode and therefore experience genuine emotions which naturally have an influence upon the nature of the testimony that is requested of them.³

In both picture- and reality-experiments a distinction is ordinarily made between *report* and *cross-examination*. In the report the

¹ In discussing true deceptive remembrance we must omit *deliberate* falsification of remembered facts, and thus the phenomena of lying, dissembling, and perjury.

² Besides many other pictures, a colored picture of a peasant's room that I first made use of in 1903 has been continually in use with children and adults.

³ The cinema has also been used occasionally in such experiments.

person being tested must give a connected account from unprompted remembrance; in cross-examination, remembrance is prompted by questions as to details. The verbal form of these questions is also worked out beforehand; in such lists of questions a special part is played by *suggestive* (leading) questions that by wording or innuendo call for a definite answer, e.g., "Did not the man have a knife in his hand?"

Such tests also permit quantitative statements concerning: the range of reportability (number of single items reported), the classification of the *Aussage* under various categories (essential and non-essential, objects, wording, actions, specifications of color and locale, etc.), the accuracy of the *Aussage* (ratio of the correct report to all items reported), accuracy on cross-examination (ratio of correctly answered questions to all questions), suggestibility (percentage of suggestive questions taking effect), and other particulars. By means of these indices groups and individuals may be compared. Aside from purely quantitative determinations, however, *Aussage* experiments afford opportunity for valuable observations of the behavior of the subjects while *having* to remember and being compelled to undergo cross-examination.

In recent years the experimental method has been supplemented by the *casuistic* procedure. In the administration of justice, the treatment of patients, and school administration, incidents continually occur having remarkable *Aussage* phenomena, the more exact presentation of which yields important psychological facts.¹

2. EXPERIMENTS ON TESTIMONY

a. *Limits of accuracy of remembrance.* As the first result of the experiments, it must be noticed that there is no 100 per cent accuracy of remembrance. Under favorable conditions, it is true, memory and report correspond closely in reproducing the facts, but even here there is no guarantee of complete agreement. As soon as unfavorable conditions—which are numerous—intrude, the reliability of *Aussage* is lowered considerably.

For example, I had favorable conditions in a picture experiment conducted with educated adults. They were allowed to study the simple pictures in a leisurely way (45 seconds). They knew while viewing them that they would have to report on the contents, and the report was called for immediately after the presentation. They were asked to include reports of only those pictorial items which they still remembered with certainty. There was a strong determination to give correct reports; emotional inhibition and excitement were lacking. Nevertheless these

¹ Collections of cases have been published by Marbe, Plaut, W. Stern, among others.

reports contained $5\frac{1}{2}$ per cent incorrect statements on the average, and these did not always pertain to non-essentials.

Let us now survey the *factors* that can adversely affect the accuracy of remembrance.

b. Perception, attention, and time factor. A few sources of falsification are to be found in the original perception. Sensory illusions, in which something is seen or heard incorrectly, a wrong apprehension of the facts because of faulty understanding or prejudice due to emotional interest in the experience, invest it with error *at the outset*. Subsequent corrections are in such cases difficult and infrequent.

A prison guard complained excitedly to the warden that in a fit of rage Convict X had attacked him with a knife. It turned out that X had had no knife at his disposal, but in his rage had seized a herring that had just been served to him and had brandished it at the guard.

The degree of *attention* with which the fact is first registered plays a very important part. Whatever is intensively *attended to* has much greater probability of being remembered correctly than anything that is perceived merely at the fringe of attention. In extreme instances inattention may so operate that while impressions affect the sense organs they remain wholly unnoticed; these are instances of "partial sleep."¹ The average witness knows nothing of the extent of inattention; thus it happens that he roundly denies the existence of what he does not attend to (saying: "Y was not present" instead of saying "I did not notice him because I was attending to something else"), or fills the gap in his remembrance with fabrications..

A reality experiment that I performed may serve as an example. During my lecture a strange man walked into the room, asked permission to look at a book in the library, spent a short time reading in the room and then went away *taking the book with him* (although this was strictly prohibited). Meanwhile, during the continuing lecture, the students had given no particular attention to the man and his action. A week later they were astonished at being required to give *Aussagen* about the incident and the appearance of the man.

It might be supposed that the subjects would plead distracted attention and make but a very few statements. Surprisingly, however, they avoided this cautious procedure and made numerous statements that were of course largely incorrect. No judge could have been able to assemble a fitting picture from the contradictory statements as to the dress and appearance of the man and as to whether or not he wore glasses. And the principal question "What happened to the book he was reading?" was answered correctly by only a small minority; a few others abstained from answering; but the majority declared without thinking, "He put it back in the book case."

¹ See p. 476.

As to the *time factor* a similar twofold effect can be observed. If a lengthy interval occurs between the primary experience and the reproduction, there is not only increased forgetting, but usually more falsification of statements. (There even occur paradoxical cases in which the later testimony contains more statements than the earlier. But nearly always it is only a matter of apparent improvement of memory, for qualitatively later testimony is ordinarily much worse and the percentage of errors far higher.)

The picture experiment described above (p. 257) was repeated a few weeks later, when the subjects were again asked to describe the pictures they had looked at, without seeing them again. The reports were only slightly less extensive; but the amount of error had doubled (from 5 per cent to 10 per cent on the average).

c. *The effects of cross-examination and suggestion.* The *external influences* under which testimony takes place have much weight. They account for the principal difference between *free* and *required Aussage*. So long as the witness (corresponding to the subject in an experiment) is able to tell his story in a connected manner, the danger of going astray is far less than when he is constrained by cross-examination. In picture experiments, for example, when a connected report was first required along with a completing cross-examination, the wrong statements were of the order of 5 per cent to 10 per cent in the first part, 20 per cent to 25 per cent in the second.

This result is perfectly comprehensible. As long as the witness is in a position to report *spontaneously*, it is within his power to pick and choose. He therefore restricts himself to those features of the event toward which he was most attentive, those that interested him, and that form, as it were, the brightly illuminated center of his remembrance. The situation is quite otherwise in cross-examination. There statements are *demanded* concerning particulars that did not appear in the report. They belong for the most part to the dim margin of remembrance, if they ever had a place in it at all. What can at best be represented in a wholly vague and ambiguous way must be forced into the form of confident statements. To be sure, one may refuse to be compelled; the reply "I don't know" is always available. But it is remarkable how slight use is made of it.

"I don't know" is the escape of the lazy person who does not want to exert himself to arouse his remembrance, or of the shy person who does not venture to say aloud what is for him a confused notion. In such cases it is often possible, under the instructions, to achieve important and correct statements. "I don't know" may also, however, be the reply of an independently-minded individual who will not respond when the memory images are not present at all or are unclear.

A refusal to reply that is motivated in this way is, however, not frequent. There are people to whom the question acts as an imperative "You must answer"; in their statements under cross-examination the reply "I don't know" is rarely found.

If the imperative effect of a mere question influences the report, it does so far more whenever it takes the form of a suggestion. It was one of the most important conclusions from *Aussage* experiments that leading *questions* are capable of exercising a well-nigh fatal power. If the expectant tone of the question is very impressive (e.g., "Don't you recall that the man had a stick in his hand?"), and if the person being questioned does not possess great independence and resistance, it may well happen that the inquisitor packs more of his opinions into the witness through questions than the factual recollections he elicits from him.

In experiments with children and adolescents, using the picture of the farmer's house, a dozen leading questions were interspersed in a lengthy inquiry. The coefficient of suggestibility was on the average 25 per cent, that is, every fourth leading question concerning a non-existent object was answered incorrectly in the affirmative. The bare form of the question, "Was there not a cupboard in the picture?" "Did not the boy have on a torn jacket?" etc., sufficed to elicit the reply "yes" in many cases.

Many a "yes," to be sure, may not have been spoken in full conviction of the correctness of the statement, but more in order to satisfy the insistent questioner. Conscious lying may occur as well as half believing (perhaps with this motivation: if the person in authority who is asking questions believes that it was thus and so, then it must have been).

But once a "yes" is spoken and a quite specific idea is thereby *fixed*, it is but a short step to complete conviction of correctness. For since one has committed oneself, doubts and reflections are thrust back as far as possible. Finally the suggested idea becomes so fused with total remembrance that it acquires the same certainty as correct ideas. This stabilizing of an effect of suggestion has two important consequences.

(1) In subsequent *Aussagen* about the same factual matter, ideas that were earlier suggested are often *spontaneously* expressed. The inquisitor, being thus unable to refer their origin to the earlier suggestion, concludes from the spontaneity of expression that they are especially credible.

(2) The suggested idea becomes the point of departure for *allied questions* that may lead to further falsification of the facts.

In the cross-examination on the picture of the peasant's house a twelve-year old girl had answered *in the affirmative* the suggestive question

"Was there not a cupboard in the picture?" The following questions and answers refer to this illusionary cupboard:

Where was the cupboard? "In the right corner."

What color was it? "Brown."

Did it have one or two doors? "Two."

Could you see what was in it? "Yes, clothes."

What was on top of the cupboard? "A flowerpot."

This conversation could have been continued further at pleasure. The child did not wish to lie outright, but was so given to phantasy and at the same time so suggestible, that she accepted every suggestion of the questioner and provided the necessary substantiating detail.

This is an extreme and rare case, but even less suggestive effect may prejudice the value of an *Aussage*. Suggested remembrance, moreover, is invoked not only through cross-examinations, but may proceed from other external factors, such as the press, rumors, *Aussagen* of others, pictures, etc. If, for example, the rumor is spread around a girls' school that a man teacher is behaving improperly toward some of the students, other students soon "remember" that he previously behaved the same way toward them. Newspaper accounts of the supposed commission of a crime influence many readers to assert that they saw this or that happen, etc. In times of intense mass excitement, at the outbreak of war, in revolutions, catastrophes, such suggestions exercise an anonymous and hence potent effect; suddenly "it is established" that a disguised spy has been seen somewhere, and hundreds corroborate it from alleged personal experience.

d. Temporalization. Proper *temporalization* plays an important part in every *Aussage*; for only those remembrances must be recorded that refer to a *specific* point of time in the past. Nothing depends upon the witness' having seen the suspect on a certain street corner at some time or other, but it matters greatly whether it was precisely on March 24 at three in the afternoon. An otherwise full and detailed memory may nevertheless be combined with a wholly inadequate consciousness of time. The memory image of the encounter is very vivid to the witness, but he did not notice the time of occurrence, and this may therefore be readily fixed by suggestion and accepted as offered in cross-examination. There are countless people in whose consciousness the past has but little temporal organization.

Young children have an extremely indefinite awareness of chronology; if they are made to give a statement as to time, perhaps through the question "Did you do this and that yesterday?" they are quite ready to agree, because the fact as such is remembered, while temporalization in the preceding day is still beyond their understanding.

But even with adults, deception conditioned in this way is not infrequent. In one of my picture experiments a subject gave an account, a few weeks after looking at the picture, that beyond a few correct items contained wholly incongruous statements. This subject was confusing his remembrance with another picture that he had seen at a quite different time.

e. *The commonplace and the unusual.* Specific temporalization is especially difficult when it is a question of impressions that are already familiar. Deviations from the ordinary that were not attended to are later easily re-interpreted in retrospect in the direction of what is customary. In general, furniture is brown. If asked the color of a *particular* piece of furniture that someone saw on a particular occasion, one tends to answer "brown" unless a striking variation was perceived.

This explains the following remarkable result with the picture of the peasant's room. In the brightly colored picture there was among other things a child's cradle of a very striking *blue* color. The percentage of subjects who noticed this striking coloration at once and reported on it spontaneously, was small. On cross-examination, the question as to the color of the cradle elicited the replies "brown" or "yellow" in two-thirds of all cases. (This finding also proves that even a *majority* of witnesses can be mistaken.)

A teacher missed a charm that always hung from his watch chain. In making inquiries of the classes he had taught on the same day, it turned out that most of the pupils thought they had seen the charm on the chain *that day*. It was later found in a club in which the teacher had been *on the preceding day*. The pupils had incorrectly projected the accustomed sight of the charm into the day concerning which they were questioned. It was natural that the percentage of pupils who temporalized erroneously was greater for the lower grades than for the older.

It might be supposed from this that *unusual* and accidental impressions, if attended to, for that reason offer the greatest assurance of being remembered well. Here, however, a new obstacle arises. If something commands attention especially because of its *peculiarity*, there is a tendency to exaggerate this peculiarity in remembrance. If a man appears striking because of his size, in remembrance he becomes a giant. If one is impressed by the large number of people in the crowd on some occasion, the estimated number continues to grow larger with the passage of time, etc. This is especially true of those experiences which have a special *emotional* effect. A danger that has been survived is increased in remembrance; the impression of a good action that one witnessed becomes idealized as time passes.

Here that subject-reference of remembrance has much effect in tinging past experiences with subjective needs and emotions. This factor of falsification operates most flagrantly in chain-*Aussagen*.

called *rumors*. For each person who spreads a rumor further omits from it whatever is outside his interest or comprehension; on that account he emphasizes and exaggerates whatever strikes him as important and unusual; consequently, after being carried by only a small number of intermediaries, the fact may be distorted beyond recognition.

f. Organizational tendencies. Logical, aesthetic, and verbal organizational tendencies must transform more or less clear, frequently incomplete and unordered memory images into a clearcut relationship that is understandable to subject and examiner, if a report is to become possible. In this *reduction to logical terms*, additions, prejudices, and interpretations play a part of which the person making the report is himself usually unaware.¹

In one of my *Aussage* experiments the picture of a household moving day was used. An open wagon was packed full of furniture; in front, serving as the driver's seat, was a sofa on which a woman was sitting. A student who had to reproduce the contents of the picture after several weeks recollected the seated woman, but not the object on which she was sitting. But since she must have been sitting on something, a packing box was inserted beneath her in place of the sofa. The subject did not suspect that his packing box was merely a conjecture and not a real remembrance.

Such interpretations are especially serious when they concern not external objects and events, but their *causes*, the purposes, motives, etc., that are involved. The logical need for an intelligible cause frequently gets mixed up with subjective affects. For example, if a witness has to recount whether the defendant's action that he witnessed was brought about premeditatedly, rashly, or negligently, the interpretation that he gives to his scanty remembrance becomes determined by his stand in the dispute between the parties.

The *aesthetic* need for rounding out and dressing up the portrayal operates in a similar manner. Accounts of personal experience that are both "truth and poetry" can be pleasurable for the teller and his hearers so long as it is simply a question of artistic enjoyment. It is otherwise when a witness in court becomes fired with his own recital and pays less attention to objective accuracy. Children, artists, imaginative natures, are at times unable to resolve this fusion of remembrance and confabulation and to do justice to the object-reference of the *Aussage*.

Finally, we must notice the reduction of remembrance to *verbal* expression. Words are *unyielding* in comparison with the undulating and moving texture of ideas that must be reproduced; hence memory

¹ For the detailed elaboration of such logical tendencies in *recollections of dreams*, see p. 346.

images undergo a drastic simplification and solidification through being forced into verbal form. Thus, if facts must be brought out a second time at some later date (e.g., under a second cross-examination), the *expressions* that were employed for the first description are often more clearly remembered than the objects and the events themselves. With numerous *Aussagen* of the same event the verbal form gradually becomes *stereotyped*; this is the best sign that in place of pictorial remembrance of objects and events, verbal remembrance is introduced.

On the other hand, language is *ambiguous*, and if words alone are reproduced it may happen that at the second or third time different representations are connected with them than on the occasion of the first wording of the *Aussage*.

In the experiment with the picture of the household moving just mentioned, one subject employed the poetic expression "A painter is approaching the gateway of a new life." A few weeks later the word "gateway" was still firmly lodged in mind, but the originally metaphorical import of the word was forgotten. The statement resulted, that "A moving van is passing through a narrow gateway." Of such a gateway there was no trace in the picture.

g. *Characterological and biological factors.* The effect of the general conditions discussed above depends greatly upon the personal *susceptivity* to these influencing factors of the person giving the *Aussage*.

Here *characterological* items are of significance. For whether the clustering ideas that are given out as remembrances are freely passed, or filtered through a more or less rigid censorship, is always a matter of scruples and self-criticism. Even within the scope of the will to be truthful there is wide opportunity for constraint in the treatment of remembrances and words. People of the "objective type" give at the outset better assurance of correct *Aussagen* than those who subjectify, and people of strong and independent wills resist better the suggestions of cross-examination and of rumors than those of weak wills.

For all that, the "perspective of character"¹ must not be overlooked. Even an educated person who is in general very cautious and objective may be a highly subjective witness if interests touching his own person or those near to him are involved. And a young person who might normally be only slightly suggestible can become spellbound by a suggestive companion to such a degree that he sees and represents the facts only in the light desired by the friend.

The dependence of the accuracy of *Aussage* on the *biological* conditions of age and sex has also been investigated from many sides. It has been shown very clearly that with *children* there is a diminution

¹ See p. 444.

of suggestibility with increasing age; in picture experiments seven-year-old children accept half of all suggestive questions proposed to them, while older children respond to only every fourth question. At puberty there seems to be a new spurt of suggestibility; this greater readiness to be influenced, in combination with the very lively imagination at that age and the effect of the awakening urges, makes the *Aussagen* of adolescent witnesses especially dubious. And this is also the field in which the advice of psychological experts is to be sought. As to sex-differences, the results of experimental *Aussage* investigations are equivocal. Although in the majority of cases the *Aussagen* of women show a higher percentage of erroneous statements, the opposite is sometimes the case. To be sure, in such experiments the inner interest of the subject is small, and objective treatment is therefore more easily possible. But in concrete instances in actual life it is more difficult for women in general than for men to liberate themselves from subjective emotional interferences and hence from certain falsifications of testimony.

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PART FOUR
THINKING. IMAGINATION

CHAPTER XV

THOUGHT

I. PSYCHOLOGY OF THINKING

I. GENERAL REMARKS

Until very recently, scientific thinking about thought has been almost wholly non-psychological in purpose, focussing instead upon the nature of factual thinking, upon the requirements to which thought must conform in order to produce valid results, and upon the limits of its validity. It was logic, epistemology, and metaphysics, that have traditionally dealt with thought.

Interest in thought *as it ought to be* for a long time eclipsed interest in thought *as it is*. Now, however, a change is taking place. Embryonic, groping, naïve, confused, wrong thinking, thinking in its manifold connections with non-intellectual factors, practical thinking, magical thinking—all these topics are finally beginning to come within the scope of investigation, now that a psychology of thought has been started.

Even on the psychological side, however, its development has been impeded; for large and influential schools of psychology regarded thought not as a mental activity of intrinsic significance, but as a special manifestation of imagery. No fundamental distinction was made between "thoughts" and "images," nor between true acts of thought and associations.

It required the shift of psychology at the beginning of the present century from elementaristic and mechanistic conceptions, and renewed impacts from the philosophical quarter, to lay the foundations of a true psychology of thought. The impetus provided by the phenomenology of Edmund Husserl, which affected the work of experimental psychology in Germany was especially fruitful. This work was first applied systematically to problems of thought by the group surrounding Oswald Külpe (called the Würzburg School).¹ These psychologists applied the method of experimental introspection to the thinking processes of educated adults.

In the next period, other methods and points of view came to be

¹ Among the numerous investigators belonging to it may be mentioned Ach, Karl and Charlotte Bühler, Lindworsky, Marbe, Messer, Selz, Watt, and for the psychology of religion in particular, Gergensohn.

included. Child, animal, and folk psychology made valuable contributions to the problem of thought. Further connections were also established with *philosophical* treatments of the topic;¹ in fact, an attempt was made from the philosophical side to discover the real germ of *all* psychology in a psychology of thought rooted in epistemology (Hoenigswald).

The psychological approach to thought was still further complicated in another quarter, the *metaphysical*, through the antithesis of the rational and the irrational. Thought corresponds to the rational world; impulse and intuition on the one hand, and feeling and emotion on the other, to the irrational world. From the point of view of psychology, moreover, is thinking something radically different from impulse in the one case and the emotional sphere in the other? Correspondingly, is there a complete break between animals restricted to instinct and sensation, and *homo sapiens*; or is there merely a difference in degree of development? It is evident that such questions are anchored firmly in value-hypotheses, but in their implications they nevertheless extend into regions that permit scientific inquiry and require its critical assistance.

Here too a personalistically oriented psychology of thought may make use of the twofold principle of salience and embedding. For on the one hand such a psychology sets forth the *special* nature of thought and contrasts it with other aspects of mind, such as impulse, imagery and feeling; this is necessitated by the characteristic display in thinking of essentially *salient* experiential wholes and organized processes. On the other hand, however, thinking remains an activity that is also deeply *embedded* in the total person, being everywhere intermingled and even fused with other kinds of mental components. Because of this fact, thinking is at once more profoundly complex and far less "rational" than it would be if it were an independently logical faculty operating in isolation. There is genetic evidence that thinking develops continuously from pre-logical stages, overshadowing them in its growth. In consequence it is both a transformation and a conqueror of the sphere of instinct and intuition, or on another plane, both the adversary and confederate of feeling and emotion.

2. MODES OF APPEARANCE OF THOUGHT

The following four examples of thought processes represent four basic *modes of appearance* of thought, and are selected so as to range from concrete to increasingly abstract forms. They all show clearly that in content and function thought is something different from

¹ See among others Ernst Cassirer, *Philosophy of Symbolic Forms*.

imagery, however numerous the connections may be between these two aspects of mind.

In the first three modes of appearance, thought is an essentially static *having of thoughts*. The fourth manifestation is a dynamic *seeking of thoughts*.

a. "*Thinking of*" something. When I think of the port of Hamburg, various images arise within me; the picture of the port from a vantage point on high ground, the changing scenery on riding around it, arriving in the evening on a crowded excursion steamer, the view of a launching; also, the auditory images of screeching sirens and pounding machinery, etc. In conjunction with all this goes the word-image "port of Hamburg." But none of it is *the thought* of the port of Hamburg, but simply scaffolding, the means of supporting it. In having the thought, I do not mean the visual appearance of the harbor from a certain viewpoint, nor the harbor noises and harbor smells that I call to mind, but the object "*port of Hamburg*" as it can never appear as the content of a single image. I keep thinking of it under different perspectives, now as a center of world commerce, now as a configuration of buildings, again as point of interest for travelers; but despite such perspectives, it is always the *same* harbor. The two experiential components, sameness and perspective, are not compressible into single concrete images, but are of the nature of pure thought.

b. "*Knowing about*" something. Several persons are discussing the coming state of the weather. A says: "Possibly we shall have rain today." B says: "I think it is more than likely." C says: "The meteorological conditions indicate that it will have to rain today." All three are talking about rain, and may have certain more or less clear images of rain. But these images occur in a different *modality* of thought for each; possibility, probability, necessity; these modalities as experienced lack ideational representatives. Nevertheless each of the speakers *knows* exactly what these modal expressions mean; the impalpability of their knowledge in no way detracts from the clarity of their thinking.

C's remark requires further analysis. The experience of necessity in his thought about the weather pertains not so much to the rain itself as to the *relation* between meterological conditions and rain. Both terms of the relation may have an imaginal basis, perhaps in images of the barometer reading and of the expected downpour. The relation that obtains *between* them, however, is not present imaginarily, but is *thought*, as a definite category of causation. It is an impalpable but clear knowledge of categorial relation.

c. *Understanding the abstract*. I *understand* the mathematical proposition: "The sum of the angles of a plane triangle amounts to two right angles." What does this mean in terms of consciousness?

Let us confine ourselves at first to the separate items of the proposition (although this does a certain amount of violence to the content of experience). Of the three terms sum of the angles, plane triangle, two right angles, the last is evidently richest in imagery; on hearing the words "two right angles," everyone who has ever taken geometry will have an image of this sort: \perp . It is quite different with "sum of the three angles"; although one may have some confused notion of how angles add together about a common vertex, the size of the particular angles remains unspecified. Much the same thing is true of the thought "plane triangle." The image of one concrete triangle of certain size, shape, and color may be replaced instantly with a triangle otherwise imagined without in the least disturbing the content of thought. Only triangularity and planeness are essential; all other attributes that imagined triangles possess and which distinguish them from one another, are indifferent as far as the thought is concerned. It is sufficient that some sort of triangle appear; any triangle that is imagined at all serves merely as an arbitrary *representative* of the thought.

Let us, however, abandon the artificial separation of the three items. There are not three coexisting thoughts present in my consciousness, but one *total thought* which assumes verbally the form of the proposition and logically the form of a judgment. *Psychologically* this total thought is best defined as a *meaning*; the proposition as a whole has a unified, cohesive meaning-content that is more than, and different from, the meaning-contents of the individual experiential components of thought and their relations. What we call "understanding" in the domain of thought is always a grasping of the total meaning of a self-contained unitary thought.

d. "*Thinking something over.*" A young psychologist asks my advice concerning the choice of a topic for his first independent research. I know fairly well the direction of his interests, which I have him make more definitive by his statements; I know approximately the extent and nature of his talent and his competence,—so I "think it over." Something very remarkable thereby takes place within me. I think of something that is not yet present, the topic; the content of my preliminary thoughts is simply *search* for a topic, concentration upon a gap which is to be filled in. But that which is still lacking occupies me completely and even determines the course of thoughts that run through my head until some one of them accords with the search and is experienced as the "solution" of the difficulty. Then when I put it up to my questioner a similar process commences with him; he thinks the proposed topic over, which at first is also an unfilled gap for him, to see if it agrees with his notion of his desires and capabilities.

II. THOUGHT AND IMAGE¹

I. DIFFERENCES AND RELATIONSHIPS

There is as yet no uniformity of *designation* for the specific contents of thought. The older psychology used to extend the term "idea" (which had a *sensory* connotation for it) to cover experiential contents of thinking.² Such designation seems unfortunate because the diversity is narrowed down to a mere difference in degree of distinctness and because concrete images are taken as *types* in accordance with which the contents of thought and the thought processes are also interpreted.

For this reason, when the newer psychology of thought came upon *impalpable* contents of consciousness, it sought terms of its own. The most appropriate expression seems to be the designation "thoughts," taken over by Karl Bühler from ordinary speech and introduced into scientific terminology.³

The difference, in terms of inner experience, between "images" and "thoughts" is, however, only partly characterized by the attributes "concrete" and "impalpable"; there is a deeper meaning. An image is simply *present* in its immanent depictive nature; a thought goes beyond itself, and *intends* something that it is not (an object, a class, a relation, a meaning, a solution). This *intention*⁴ which a thought possesses invests it with a special quality in consciousness.

Quite as important as the difference between them is the *positive* relation between images and thoughts. These belong with each other; except in a few border conditions, they in fact always occur together, refer to each other, or are fused with each other. Thus there is no question of different "elements," but of *moments* of a unitary state of consciousness.

The *border conditions* are scarcely more describable. Purely imaginal, "thought-less" experience is most nearly approached by the mental state of day-dreaming, where images crowd and subside in consciousness in a self-sufficient manner, without intending or signifying anything beyond themselves. Similar states may be supposed to occur in infants and in the insane who have "flights of ideas." At the other extreme impalpable and non-imaginal, "pure," thought-experi-

¹ The literature devoted to this topic is assembled in Meyerson's *L'Image*.—See also p. 214 of this book.

² German psychologists used the terms *Allgemein-Vorstellungen* (general ideas), *Ober-Vorstellungen* (superordinate ideas) etc.

³ In German *Gedanken*. Other German terms are *Bewusstheit* (awareness), *Bewusstseinslage* (posture of consciousness).

⁴ The concepts of "intention" and "intentionality" form central features of Edmund Husserl's phenomenology.

ences are approximated only in people devoting themselves to highly abstract sciences, say epistemologists, mathematicians, students of jurisprudence; and even here only on rare acmes of their thinking activity, never as the normal form of their thought.

The entire range of mental experience within these extremes is at all times both concrete and abstract, filled with images and organized by thoughts. But the proportion of either may vary. Thinking is involved as *soon* as one recognizes an individual object as an object having existence outside one's person (cf. our example of the port of Hamburg); on the other side, imagery is *still* involved whenever one thinks out an abstract proposition like that of the sum of the angles of a plane triangle and understands its meaning. In the latter instance, however, the emancipation of thought from imagery is far more effective than in the former.

This clarifies one characteristic of imagery that we were able to suggest only provisionally at another place;¹ *its operation as mediator between perception and thought*. It is precisely because, in comparison with the full-bodied concreteness of perception, it seems peculiarly vague, sketchy, and ambiguous, that imagery is able, in half-abstractive, schematic form, to constitute a means of support for thinking operations.

In logic, "abstraction" is that thought process by which accidental and concrete special cases are ruled out and persistent and general principles are obtained. In psychology it is more desirable to use the term *deconcretizing*, which is not preëmpted by logic. As a matter of fact, true logical abstraction, which rests upon the deliberate comparing and isolating of common attributes, is evidently only the infrequent acme of a far more comprehensive process in which the concrete is overcome step by step. The formation and utilization of schematic images is one of the most important stages in this process.

If my image of a triangle contained all the shadings and inaccuracies that I had perceived in a drawing of a triangle at some previous time, such an imagined triangle would not be able to serve as the freely exchangeable representative of the thought of any triangle concerned in the proposition about the sum of its angles. It is only because the image is already schematized to a considerable extent, that it is able to contribute to further reductions.

To the process of deconcretizing there corresponds in the opposite direction the process of *concretizing*, in which an abstract thought strives for an imaginal footing and for an illustration, such as the solving of a problem, and for the application of a rule in some special case. The first step in this process leads to an imaginal schema which is sufficiently concrete or palpable to offer a point of attack for thought,

¹ See p. 216.

but sufficiently free to allow room and encouragement for further thinking, the result finally gained being a relatively concrete thought.

2. SIGNS AND SYMBOLS

There are certain groups of images that possess *schematic* character and hence facilitate thought in such a specialized sense that they are simple and distinct, easily reproducible and applicable in detail, and readily established for social intercourse between individuals; these are the *indicative* ("semantic") images, which belong chiefly to the domain of vision and audition.

The significance of *language* for thought now becomes clear. Language itself, as the sum total of audible-graphic-motor perceptions, images, and actions, is of course in no sense identical with thought; there are thought-free language experiences and expressions, just as there is speech-free, "unformulated" thought. As long as there is no means of transferring them to any domain of the concrete, thoughts remain completely evanescent and elusive, subject neither to identification nor to exchange among people; they may be fixed only through attachment to images that are always available for use. These images *must* be schematic, for excessive concretion means binding and confining thoughts to too individual and therefore non-comparable situations. The fixing of thoughts is obtained by the use of these *signs*. The plus sign + has no other function than to represent concretely the concept of addition of two quantities, so that the same individual can always connect the same identical thought with it, and many individuals can come to an agreement about an identical thought. Chemical symbols, traffic signals, letters and punctuation, and the words in Esperanto are other examples of this purely indicative function of schematic images.

These examples teach us something further; they come from *artificially constructed* systems of signs and therefore bespeak a kind of thinking that is already far removed from any concrete basis. It is different with language that *grows naturally*. The word-images belonging to the latter of course have the character of signs too, and this becomes more obvious the more language is made to serve as the expression of pure thought, e.g., in the language of science, in impersonal reporting of objective occurrences, etc. But colloquial word-images are also *meaningful in their concreteness itself*; their audible, motor, and visual (writing) content invests thought itself with concreteness, and thereby embeds it more deeply in the totality of personal and social experience. The thought that is connected with the word "house" is experientially not the same as that carried by *maison* although the material object of both thoughts may be identical. And in the case of a whole sentence or a lengthy verbal peroration, translation into

another language in the sense of achieving identical definitive thoughts is all the more impossible. *For it is through concrete word-images* that thoughts take root in the home soil of the prelogical personal and racial bases of thought.

This relation between imagery and thought is also reversible in its operation; the image itself is tinged with thinking; it not only points the way to the thought, as an arbitrary sign, but expresses it in the concrete sphere. Compare the mathematical addition sign (+) just mentioned with the cross on Christian ceremonial objects, which looks almost exactly like it; the latter has not merely indicative but out-and-out representative character; it belongs in an entirely different *inner* way to the thought of Christianity than the plus sign to the thought of addition in arithmetic.

Such schematic images, which are experienced not only as signs *for*, but as expressive representations of thoughts, are called *symbolic* images; through them thoughts receive, besides bare thought-quality, a "physiognomical" aspect.

The two complementary processes of concretization and deconcretization may be traced in the *relation of symbol to sign*, both in the individual and in the race.

Primitive thinking, which is still confined to individual objects, does not differentiate between thoughts and the images that support them. In the schema  a house is *depicted* as well as *indicated*; the sound "tick-tock" is a component of the experience "clock" and also *means* clock; in a vivid red color blood and fire may be *seen*, and blood or fire is *intended*. When thinking gradually develops the insight that there are signs for thoughts, this insight clings at first to natural symbols of this sort (in contrast to "conventional signs"); only gradually do the symbols lose this resemblance to the objects designated and acquire a more and more schematized form. This loss of concreteness is complementary to their better fitness to serve as arbitrary signs for abstract contents of thinking.

The vocabulary of early childhood swarms with natural symbols of this sort, which are either of a depictive or an interjectional nature (bow-wow, choo-choo; wah wah). Later "bow-wow" becomes "dog," "wah wah" "pain"; in short, the concrete symbol is replaced by the conventional sign.¹

Writing also consists originally of pictures in the manner of the house given in the example above; the more manifold the thoughts that are to be represented graphically, the more the schemata must become both simplified and generalized, until finally the representatory relation between pictorial writing and what is thought disappears; as in

¹ Cf. C. and W. Stern, *Die Kindersprache*.

Chinese writing, the schema becomes a bare sign of the object. In a further stage the simplified pictorial writing, while reproducing only a part of the utterance, is capable of covering identical portions of many utterances; pictorial writing then becomes writing by means of letter-signs.

Let us now turn to the development of *drawing*. As long as the child is in the stage of schematic drawing, he is not aware of the difference between concrete representation and abstract indication of the object. Thus without any scruples he may proceed to draw "a" dog or "a" man which is also "the" dog or "the" man, that is, on the one hand a concrete outline figure, and on the other a generalized sign for the thought of dog or man.¹ Later the paths divide. A house, for instance, is either drawn as a concretely conceived structure viewed from a definite angle with definite displacements and shortenings of perspective, or is consciously schematized in ground plan or elevation, that is, in a thought-out isolation, which has almost no connection with concrete images of the house. And in architects' mechanical drawings, as contrasted with the painter's depiction of the house, deconcretization is pushed to the point of pure conventional signs for masonry, glass, steel, etc.

A parallel in cultural history may be found in tracing the evolution of the map. Old maps contain numerous concrete pictures representing buildings or the products of certain regions, mountains are given definite perspective, etc. On modern, completely schematized maps there survive only final "symbolical" traces of all this, as in making water blue, using hatching for mountains and different sized circles for different sized cities.

Fortunately, however, this process of deconcretization does not stand alone. While the increasing ingenuity of thought demands that the system of imaginal signs continue always at its disposal, if left alone a formalizing of the domain of thought tends to occur. Having no existence of its own by reason of its abstractness, this must in some way maintain an anchorage in the totality of mental activity. This personal requirement bespeaks the process of *concretization* which seeks perpetually to impart to the bare and barren signs a symbolical character that partakes of life.

The effect of this counter tendency is illustrated by *traffic signals*. From the point of view of the mere providing of signals, it would be entirely conceivable to make use of a green light for danger and a red light for "proceed," in place of the customary colors. But such designations would be taken as somehow contrary. The primal, stirring and exciting effect of red has become the far more *adequate* symbol for signify-

¹ At one time I encountered a child who drew a schematic mammal, and on inquiry as to what animal it was, replied in some perplexity, "just an animal." He had translated the generic "idea of animal" into a visible schema!

ing danger, caution, stop.—Consider how *indications of direction* are symbolized by the immediate symbolism of the pointing finger on a guideboard, or in greater simplicity, by the arrow, which recalls atavistic stages in man.

Far more important is this groping backward into the sphere of the concrete within the realm of *artistic* organization of thought. However abstract the trains of thought that an author expresses, the language in which he clothes them is more to him than a system of signs, indifferent in itself, for catching and imparting these thoughts; it is also a physiognomical vitalization of them. This is true not only of the concrete portrayals and metaphors with which he dresses up abstract thinking, but also of the verbal forms for arousing ideas; rhythm and euphony, climax formation, repetition, sound-painting, etc., become natural symbols of intentions in thought. How strongly this concretizing process operates, for example, in Rousseau's or Nietzsche's thinking!

But the same process subsists in the thinking of people generally, although not with such clarity. Even those schematic images which at first fall in the class of bare signs for specific thoughts, cannot keep their impersonal character permanently; the more firmly they combine into a union with the thoughts and become embedded in common with them in the total life of the person, the more they take on a symbolical character. While we stated above that the word-image "dog" was only a conventional sign as compared with the childish word-symbol "bow-wow," the word "dog" long ago lost its accidental and arbitrary character for every one who lives by the English language; the verbal sound has acquired a "physiognomy" and has become an integral part of the *thought* "dog."

When new concrete signs are created e.g., for a newly established country, for an association, or for a political party, one may clearly observe how the sign becomes more and more of a symbol and thus aids in attaching the new thought to progressively deeper strata of the person. The symbol and that which it intends, the image and the thought, engender and support each other.

The tension between concrete imagery and abstract thinking leads to conflict in certain special cases. Thus the preoccupation of artistic natures with life in the concrete frequently precludes access to more abstract reaches of thought. Eidetics¹ are sometimes prevented, by the insistence of their sensorially inflexible imagery, from developing abstract thinking.

In conclusion, we proceed to erect a *scale* of the intellectual content of inner experience, comprising the principal degrees from the concrete

¹ See p. 201.

as immediately desirous to the generality of abstract thought. From the psychological point of view, this consists of simply indicating certain *accentuations* in a smooth and continuous series; this qualification makes clear the difference between the psychological and the logical or epistemological treatment of our problem. Since ancient times epistemology has placed the *difference* between the two extremes of "sensuousness" and "reason" so prominently in the foreground, that it necessitated special connective principles in order to account for their factual relations. Psychology, on the other hand, acknowledges at the outset the connections as well as the differences, and recognizes in perception the first intimations of thought, and the necessity for concrete symbols and signs in abstract thinking. It has continued to discover intermediate and transitional forms, and to describe them. Extending the outline suggested above,¹ the series may be tabulated as follows:

- Immediate sensory experience*
- Vital sensitivity
- Object perception
- Introceptive perception
- After images*
- Eidetic images*
- Resembling after images
- Resembling memory images
- Concrete images*
- Mnemic images
- Fantasy images
- Schematic images*
- Symbols
- Signs
- Thoughts*
- Object thoughts
 - thoughts of individual objects
 - thoughts of generalized objects
- Relational thoughts
- Total meanings

The psychological points here discussed have wide *pedagogical* significance. In the emphasis put by pedagogy for 150 years upon the principle of concreteness, it is not merely a question of training the child in the use of his senses and evoking his interest in the infinite variety of objects of perception; on the contrary, the concrete has also been recognized and cultivated as an *implement and motive for thinking*. By means of concrete images of objects, e.g., the balls of an abacus or the fingers of the hand, the child masters the process of counting; by examining specific machines or plants and animals that are observed, a generalized knowledge of physics, biology, etc. is developed. Reformatory education perhaps

¹ See p. 216.

has a certain one-sidedness in that it has emphasized the *concretizing* process as strongly as possible while not paying sufficient heed to the equally necessary balancing process of *deconcretizing*. The developing individual must not only learn to enliven abstract thought by referring back to the concrete, but also gradually to unlimber and escape from the *fetters* which vivid concreteness imposes upon the scope of thinking. One who in learning to count remains constantly confined to any sort of concrete numerable objects will never be able to comprehend abstract mathematical principles in their true significance. The same is true in other domains. The more advanced the grade at school, and the more closely mental maturity in the sphere of abstract thinking is approached, the more must deconcretizing take place to offset concretizing in education.

III. THE OPERATION OF THOUGHT

The actual operation of thought is first of all characterized by *salience*. An individual train of thought nearly always occupies a clearly separated interval of time that is internally *structured*; it is initiated by an impulse to thought, proceeds toward a goal, and concludes with the attainment of, the failure to attain, or the postponement of the goal. In this respect the progress of a thought bears a close relationship to the progress of an act of will; indeed it *is* such an act, saving only that the goal set for it is not some change in the external world, but an intellectual effect.

I. IMPULSES TO THOUGHT

Thought is put into motion by external stimuli and internal sets and needs. Accordingly as one or the other factor predominates, the thought process may be defined as "reactive" or as "spontaneous." But this distinction is only relative. There is no thought generated purely from the outside without the participation of the internal capacity for thought in general and momentary readiness for thought in particular. And there is no purely spontaneous thinking entirely independent of the external circumstances and situational properties. Only degrees of the proportions of external and internal impulsive factors can be distinguished.

a. *Lower and higher impulses to thought.* In thought processes at the most primitive level both factors are closely bound together; direct gratification of an inner need is impeded by disturbances from without. The infant or the animal¹ "thinks" for the first time when purely vital strivings encounter obstacles that cannot be evaded or removed. The chimpanzee that is unable by using his habitual in-

¹ Thought in animals is treated in greater detail on pp. 319 ff. The early development of thought in children is treated by K. Bühler, Piaget, Werner, and the author, among others.

stinctive equipment, the prehensile hand, to reach a tempting banana lying too far away from the bars of his cage, fetches a stick that happens to be in the cage, and if he is very intelligent, is able to contrive unaided to join two sticks in order to lengthen the grappling tool. The bare external sensory constellation—the sight of the object lying before the cage and that of the stick—would never become an impulse to thought unless a vigorous, internal attitudinal urge for the desired food created a readiness for intelligent manipulation of these environmental objects.

As a corresponding illustration with infants, a one-year-old boy's appetite was not yet appeased when he had drunk most of the milk in his bottle. Since he obtained no more milk from the nipple but saw that there was still some milk at the bottom of the bottle, he turned the bottle around all by himself and placed its bottom to his mouth. Although his attempt involved an unsuitable method, a primitive act of thought was nevertheless instigated by the striving to attain indirectly an instinctive satisfaction that was directly denied.

Such primitive processes of thinking are of especial importance psychologically since they arise, in animals and infants, mainly as isolated, infrequent flashes of intelligence, out of a primordial state otherwise free of thought. As long as vital processes of existence continue undisturbed there is as yet no thinking on this level. One might believe a child at a certain stage or an animal of a particular species to be quite incapable of thinking, until suddenly a situation arises involving disturbance of needs which may be met only by indirect action. But such actions, being unusual, are not anticipated by instinct; they require and occasion thought. Primitive thinking draws its *impulsive energy* from the domain of the vital forces.

On more highly developed levels of thought the impulse to thought is no longer limited to purely biological needs, yet this personal attachment remains undisrupted. A traveler loses his way in the woods. He may be in general an intellectually sluggish individual, but now the feeling of disorientation and danger arouses latent psychical energies that become an impulse to thought. He reflects on his possible location, makes plans for spending the night in the woods, etc. Here too the thinking is unquestionably largely "reactive," for without the external impetus of the situation the individual would not resort to thinking. But the *situation* has the force of provoking him to thought only because it affects essential features of his personal welfare.

The higher the individual's level of development, the more readily do calmer and more subtle motives suffice to release acts of thought.

Formal impulses to thought grow out of personal needs for esteem and ascendance, the desire to overcome one's present unsatisfactory condition, to compete successfully with others, to earn a living, to

attain power or the semblance of power, etc. In terms of *content*, goals of thought are set by lasting interests and ideals; thus their occupational sphere becomes for countless people the principal theater of activity for independent thinking, while they refrain to a large extent from making use of thought in other directions. Here too belong the distinctions between "practical," "religious," "social," "theoretical" thinking. The worker, the technologist, the merchant, is aroused to thought by schemes for changing the world; religious and metaphysical thinkers feel themselves impelled to clarify and develop their position in regard to ultimates by means of thought; the social thinker applies thought to the values of society. For all of them, thinking is consequently a means employed by their personal attitudes. Only "theoretical" thinking seeks results for their own sake, but this, rather than signifying the depersonalizing of the impulse to thought, means the opposite: the erection of intellectual resources into a specifically personal impulsive factor. Here spontaneous thinking attains its highest level.

b. Situational conditions and thresholds of thought. Situational conditions must converge with the internal impulsive factors mentioned above in order for thought to occur. The prime features, indicated in the examples of chimpanzee and infant, are personal significance and novelty. The coincidence of both factors forms the presupposition for causing the activity of the person to transcend the "threshold of thought."

The external situation must be *new* to the individual. People in general are prepared to meet familiar conditions of life on the basis of other functions than thought; by means of instincts when it is a matter of phylogenetically old stimuli, or by means of memory and habit in the case of stimuli that have become familiar to the individual. But wherever these inherited or mnemonic modes of response are inadequate or do not constitute the most appropriate modes of response, thinking intervenes.

There are, of course, no two situations that are exactly alike; every situation involves some peculiarity and novelty as compared with earlier circumstances. In spite of this fact, not every situation excites thinking, nor calls for it. Rather must the peculiarity of the present situation be *personally relevant*, so that it may be able to cross the threshold of thought. On the other hand, it must not be so disconcerting that the person's response is merely a disturbance of emotional balance, or bewilderment or paralysis; it must remain below the "shock threshold." Within this wide interval the person is capable of adapting appropriately to novelty and this is the end served by thinking.

A housemaid used to empty a waste paper basket into a dustbin every day. The weight of the full basket naturally varied from day to day;

but this difference in weight, generally speaking, had no objective and no personal significance for the maid. The habit of shaking it out could function without the intervention of thought. One day the variation in weight was especially great, due to the accidental dropping into the basket of a fairly heavy box of valuables, which could not be seen beneath the papers. The servant, as she later reported, had indeed noticed the unusual heaviness, but this confused awareness quickly subsided without crossing the threshold of thought; and the contents of the basket were shaken out as usual. In a more intelligent person the strange heaviness would have acted as an impulse to thought, bringing on examination of the contents.

c. *Problem consciousness.* Plato called *astonishment* the true "philosophical" feeling. And in truth, only when and because we are surprised are we aroused to ponder. As a bare feeling, surprise alone is insufficient; it must be augmented by the *need* for deliverance from perplexity and by the *decision* to seek such deliverance. The special peculiarity of a situation which has this effect upon a given person we designate as its "problematic."

Only the more highly developed and elaborated thought processes are set in motion by *problems*. In simpler situations the questions or tasks that act as impulses to thought usually bring about a solution at once so that from the beginning of the thought to its conclusion there is one unitary experiential whole; and there is nothing problematical. We speak of problems only when the impulse to thought cannot be satisfied immediately but precipitates in a peculiar experience of openness, incompleteness and dissatisfaction. The form in which the problem becomes an impulse to thought is of secondary importance, whether as a doubt, as a question, a mystery, an assigned task, an errand, a mathematical *x*, a philosophical point of controversy.

The unsolved state of the problem is also a state of personal irresolution. "Problem pain" really exists; it is from its personal attachment and disquieting questioning that every genuine problem draws its dynamics. But there is also "problem joy," a pleasure in seeking the solution and in overcoming the difficulty; an intellectual pleasure in adventure. Every inner experience concerned with a problem is consequently ambivalent in terms of feeling.

d. *Thinking to order.* There are incentives to thought which affect the individual from without as direct *imperatives*. Tasks of thinking are pre-formulated for him by others, both content and terms being established. "You must now think about this or that." Such "thinking to order" plays an enormous part in the life of man, especially of civilized man. It is the nature of school techniques to set demands which must be satisfied by means of thought on the spur of the moment under the question and answer ritual of teacher and pupil. In adults

too the process plays a very considerable part. Not only does adult training through study, vocational preparation, and examinations, proceed under demands similar to those of the school, but social life continually imposes formal intellectual tasks, such as taking part in conversations, comprehending jokes, guessing riddles, giving decisions when asked advice. Moreover there are certain vocations which consist in consultation, and consequently in pronouncements upon problems coming from without (civil suits, diagnosis, business decisions, vocational guidance).

In other words, this kind of thinking is extremely *reactive*; by it the individual is tested out as a member of society and as a constituent of an objective world. The more highly these transpersonal domains are organized, the more their demands are imposed upon the person as preformulated tasks of thinking, so that he does not need to work out their problematics himself. This is doubtless a necessary condition for social organization and activity; indeed, the taking over of the legacy of thought by the coming generation and the raising of thinking to a societal activity are possible only on this basis. But thinking to order also has its reverse side; the more plainly acts of thought conform to external imperatives, the greater the danger that they will remain externalized and stand aloof from spontaneous intellectual needs. *Purely reactive thinking may therefore be utterly alien to the person.* Important consequences follow. In *education* it is the central task of efficient instruction not only to train the child in reactive thinking but to hit upon *spontaneous* intellectual sets (interest, attention, favorable mood) by thought-producing questions. *Psychodiagnostically* the difference between the two kinds of thinking can become crucial. Everybody is acquainted with people who were excellent students, but who later were shown up when external compulsion to think was withdrawn; they turned out to be not only sluggish thinkers but largely incapable of thinking; that is, incapable of spontaneous thought. Conversely there are highly intelligent people whose thinking proceeds very early along spontaneous and individual lines, and for this very reason responds but little to the inroads of external imperatives to thought. Such people are, for instance, "no good in examinations."

The significance of these considerations for the concept of intelligence and for the technique of intelligence testing will soon be shown.

As to *scientific method*, the distinction of reactive and spontaneous thinking places a restriction upon the value of the experimental psychology of thought. The methods of the Würzburg school,¹ being based upon thought experiments and the introspections made in them, are concerned exclusively with reactive thought. "Thinking

¹ See pp. 50, 70, and 271.

to order" takes place here in even a purer form than elsewhere because the experimental situation merely demands "thinking in general." Imperatives to thought are and must remain externalized and alien to the person; none of the spontaneous attitudes, interests, and needs which otherwise furnish incentives to thought on specific topics, are effective here. The value of the method is the possibility it yields for making exact studies of certain *formal* features of the course of thinking. But this procedure can never comprehend thought in its incisive individual form.

2. THE ACT OF THINKING AND READINESS TO THINK

The course of every thought process is determined by the combined action of two personal factors; the factor of present activity and the factor of readiness.

a. *Thought as activity.* It is a basic principle of the psychology of thought that thought is essentially action. Every person has *inner experience* of the most convincing kind that in thinking anything over, in reflecting, in grasping difficult relationships, etc., he is markedly *active*. One is astonished by those artificial fabrications of mechanistic psychologists, through which they sought to explain the course of thinking in a purely passive way by the coming and going, union and separation of elements. Day dreaming and energetic application to a hard mathematical problem display psychological differences which can be described as passive resignation in the one case and active participation of the entire person in the other.¹ Only willing is accompanied by an equally strong consciousness of activity.

The active nature of thinking contains three components.

The dynamic factor. Thinking requires the intensive expenditure of energy, which the person holds in concentration for a limited time. The individual manifestations of the dynamics of thought (concentration, rhythmatization, fatigue, etc.) we may leave to take up later.²

The teleological factor. Thought functions purposively. Each train of thought possesses its own *temporal pattern*, the culmination of which occurs in the last part of the process, the outcome of thinking. Everything else focusses upon this; the other components are subordinated to it, according to rank, as implements of thought and aids to thought, warnings against false channels, points of junction and differentiation, partial goals, which form the stages of further advance and simultaneously indicate the progress achieved. This intellectual pattern

¹ This wholly primal consciousness that the intellectual self has of its activity, has profoundly affected philosophical doctrine in all ages; indeed it has led to the view that an act of thought is the immediate origin of all intellectual existence. Here it is sufficient to recall the Aristotelian and Scholastic doctrine of the soul as an *actus purus*, Descartes' *cogito, ergo sum*, and Fichte's "The self is not a fact but an act."

² See Chaps. XXV to XXVII.

is moreover supported by varying proportions of feeling and striving; at the beginning there is tension set up by the task, and "problem pain," in conjunction with the uncertainty of the path and the questionableness of the outcome, giving way to feelings of partial progress and sudden gains, of inhibitions, blockings, and fatigue, then increasing clarification until the conclusion is reached in success or failure. Beneath all this an *act of will* operates as the driving motive; for the goal, which still lies in the future, has a *causative* effect upon the thought process, determining the choice of aids, promoting the rejection of unsuitable elements, preventing relapses into psychical processes alien to thought.

The fundamental difference between the operation of thought and the operation of association is now clear: Thinking is governed by an arrangement specified by the goal, though associative processes depend upon the mere intensity of the connection of different items and the set predominant for the time being in the individual.

There are some psychologists who acknowledge this duality but localize the purposiveness of the thinking process erroneously in the goal-idea itself. Thus Hugo Liepmann tried to maintain an associationistic view by ascribing to certain selected ideas the mysterious power to organize the others.¹ Narziss Ach created the term "determining tendency" that was to express the fundamental fact that in acts of will as well as in acts of thinking a directive force superior to mere association is at work; but he attached this "tendency" to the goal-idea. In reality the organizing tendency inheres exclusively in the person as a whole, who actualizes his goal-directedness in structuring the time-Gestalt of thinking.

The positional factor. In every act (of will as well as thought) the person assumes a *position* as a center of action with respect to his world. In acts of thought this assumption of position remains purely internal to the person; it is an *intellectual* attitude. This is either made *explicit*, through affirmation and denial, or *sought out*, by question, doubt, uncertainty. But in any case it amounts to an indescribable positing of the total person for or against the object of thought, such as a declaration or decision. He only really *thinks* who can say yes or no to what is thought, who can acknowledge or repudiate it, and who strives against such a position. Viewed genetically, this capacity is very late in appearing, for on more primitive levels the adoption of positional attitudes is still an undifferentiated psychophysical bearing of the self toward the world, that is, an act of altering it, an "external

¹ *Ober-Vorstellungen* (superordinate ideas). In the primarily psychiatric problems with which Liepmann was concerned, his conception proved to be a very important and fruitful, though inadequate theoretical formulation. The phenomenon of "flight of ideas" he explained by showing that in such cases "superordinate ideas" (that is, determining and ordering incentives to thought) become inoperative.

act of will." It is only on higher levels that the inner attitude becomes independent, relinquishing intervention in the external arrangement of things; and it is then only that pure thought, theorizing without practicing, becomes possible.

b. *Limits of activity. Readiness to think.* If the active nature of thought has been made secure against a purely mechanistic derivation of thought processes, we must now ask whether thought is *drained off* by such concentrated activity. This must be denied. There is a distinction not only between personal activity and mechanical passivity, but also between factual activity and personal *disposition*. The doctrine of the straightforward activity of thought must be radically revised; a continual shifting of *present activity and dispositional readiness* takes place.

This interplay becomes especially plain in what Bühler calls the *aha!-experience*. There are processes of thought in which the goal of thought is sought very energetically, without attaining the end directly. For example, one hears a joke and does not immediately get the point; one endeavors to descry the outline concealed in a picture puzzle; one is occupied with a mathematical principle the total meaning of which is not clear; one is confronted with a puzzling situation which is not at once seen through. In such cases active, persistent thought strikes barriers without gaining an inch, one's efforts are fruitless,—when *suddenly*, often taking the thinker himself quite unawares, the answer comes in a flash. "Aha, that's right!" The puzzle picture "looks quite different all at once," the meaning of the mathematical principle becomes perfectly clear, the point of the joke, suddenly understood, now releases the adequate response of laughter, etc. In all these instances the true *thought-work* has only prepared the ground; it has produced and enhanced a readiness of inner set. Hence the frequently strongly irrational stamp of the *aha-experience*; it appears incomprehensible that the answer was not found previously with so much active thinking endeavor, when it is now so obvious.

At times the two factors in the progress of thought may work directly *against* each other, as in trying to recollect names; all active thinking proves vain although the name is "on the tip of the tongue" (i.e., we have a hint that readiness is being strengthened by the endeavor to think); in order to become effective, however, there must be a certain passive relaxation, but this is unattainable during the act of thought. If the endeavor is given up for the time being while one becomes engrossed in other matters, the disposition can take effect—and the name pops up unexpectedly in the midst of quite extraneous trains of thought.¹

The more firmly thought is personally anchored, the more accurately

¹ See p. 248.

the interplay of readiness for thought and thought activity will function, and far better in spontaneous than in reactive thinking. In the highest forms of spontaneous thought, as in the creative activity of research, the specific *acts* of thought are often only the supreme instants which impart incentive and direction, control and systematization; but to a great extent the actual substance of thought is derived from the involuntary readiness to think. On the other hand, in the extreme forms of reactive thought, that is, in "thinking to order," the active endeavor to think is necessary.

There are thought processes of brief duration in which active concentration is pushed to the background and everything essential is left to the spontaneous release of readiness; these are called "flashes." To a wit or a clever author thoughts and thought combinations pour in without his necessarily having to intend definite goals of thought at that instant, nor to choose and follow out actively the paths they point, nor to apply forced concentration to their running off. It is not inconsistent if intensive thought-work of years may have taken place in the gradual production of such readiness.

CHAPTER XVI

THE PRINCIPAL CONTENTS OF THOUGHT

In all thinking there dwells an *intention*, whose goal may be an object, a relation, a total meaning. Psychologically, the principal forms of thought are classified according to the category of intention involved.

I. THOUGHT OF OBJECTS

At its inception thinking of objects is completely interfused with sense perception. Purely in the present the individual has an inner experience "something is there"; the initial intention of thought is a fleeting "object of the moment." Only from this point do the two paths gradually diverge, toward the thoughts of individual and of general objects. Both involve certain processes of deconcretizing.

I. THOUGHT OF INDIVIDUAL OBJECTS

The apprehension of an independently existing *single object* requires its *identification* by referring images to something which remains constant in time. This was pointed out in the example in the last chapter concerning the port of Hamburg. In infants thought of individual objects may be observed as soon as "recognition" or identification evolves from the bare feeling of familiarity on seeing the face of the mother or of a doll. The progressive "objectifying" of individual objects is a very slow process which is never entirely concluded; it is never more than a small fraction of the personal world of an individual within which those realizations, delimitations, oppositions and identifications are sought after and won.

For example, to naïve people the air that they breathe is so intimately fused with vital processes that psychologically it does not possess the complete and clear-cut nature of an independent object.

How greatly the thought of identity in reference to an object exceeds bare concrete imagery is best seen in the difference between inanimate and animate objects. *Many* images correspond to an inanimate object, such as a certain "mountain" or a "doll." The difference between them is not ascribed to the object, however, but simply to the momentarily shifting relation of the subject to it; here the thought of remaining unchanged constitutes the thought of identity. It is other-

wise with living objects. A plant grows, blossoms and withers, arousing in the course of time various perceptions and images; these become objectified, i.e., related to the changing states of the object; but the object itself is thought of as identical without regard to the changes in it, which are also occasions of thought. This capacity to identify changeable objects in thought is moreover not a phenomenon of late acquisition; it is especially marked on primitive levels of thinking, for there thought is magical; every object, every creature may be transformed into something totally different without thereby disturbing its sameness in any way; in fairy tales, myths, and sorcery there are all manner of metamorphoses of persons and things.

This primitive thought of identity naturally does not appear without concrete aids belonging in part to external perception and in part to perception of self. The course of time in which the *objects* change their state is experienced as continuous. At the same time the *subject* is experienced as identical with his previous being. "I" have recollections of former states as "mine." "I" have the consciousness that the line of my life is never broken; consequently the most varied states at different times in past and future belong to the same "me." Here the thought of identity is supported by the immediate vital background of the person; by analogy to this true self other objects thus take on a kind of personal identity.

2. THOUGHT OF GENERAL OBJECTS

The objects of thought are not only individual but also *general* (cf. example on p. 274 of the sum of the angles of a triangle); and in this case the *category of equality* is naturally of material importance as a basis of thought. For thought of the general presupposes the recognition of correspondences in a plurality of individual objects and the detaching (drawing off, "abstracting") of these correspondences from the objects, making them independent items of thought. This independence requires fixing, through the verbally formulated general concepts ("triangle," "man," "emotion"). Comparison, abstraction, and fixation are the acts that make possible thought of general objects. Their achievement assumes a fairly high degree of intellectual development.

Misinterpretations were made on this score in the earlier stages of child psychology, by ascribing too strict a logic to the mental process. When a 15 months old child called not only various birds, but also insects and flying bits of paper, "peep peep," it had not acquired the highly general thought of "flying in general": all that existed were the vagueness of the inner experience and a verbal paucity which associated a convenient word with the impression of any object moving in the air. As to whether it was the "same" object when something was called "peep peep," or

another, similar or equivalent to the previous object, these operations of thought still lie quite beyond the capacities of this period.

The primitive or fleeting thought of the adult also simulates at times an especially high degree of abstraction through the use of very general verbal symbols like "thing," "animal," "man," when in reality it is not abstraction at all, but pure indeterminateness of thought, and extreme poverty of language that are dominant.

On the other side too one must not fall into a false logic by saying that the thought of a general object *always* presupposes factual comparison, abstraction, and fixation, that is, a regular inductive procedure. If this were correct, the possible store of general thoughts in the individual would be very scanty. In reality, in order to comprehend what abstract thoughts are, he requires a relatively small number of models in which intention toward the general is developed; once they are acquired, repeated derivation from individual objects and application to them are no longer necessary; the abstract knowledge that the thought refers to the correspondence of many single objects suffices. When an individual comes across for the first time a concept previously unknown to him, e.g., "comet" or "infusorium," he understands *immediately* that not a single object but a class—the sum total of common properties of many single objects—is thereby meant, without having to perceive even a single individual representative nor to compare several of them.

In order, however, to clarify general thoughts, in order to distinguish between the appropriate and inappropriate, the essential and non-essential attributes, constant return to the concrete representation, to schema and to single objects ("examples," "cases") is of the greatest importance. Such concretizing steps in thought are continually exchanged for deconcretizing steps, in order to approximate the ideal form of the logical "concept."

In this interchange of generalized and concrete thought there occur many irregular intermediate stages. The initial development of verbalized thought in children provides especially instructive examples, of which we may present a few.¹

The first clearly recognizable general idea of the child is perhaps the thought that "everything has a name." A few months after the first acquisition of language, which still sounds like accidental associations of sounds with momentary events or individual objects, the child suddenly begins to notice that things in general may be *named*; he points at different objects with which he is unacquainted by speech, and *demands* through questioning airs or interrogative words ("what that?") to learn their names.

¹ See C. and W. Stern, *Die Kindersprache*; W. Stern, *Psychology of Early Childhood*, Parts III and VIII.

These primitive abstractions are very firmly supported by *serial formations*. When the child sees a series of objects belonging to the same species he is able to compare them *concretely*; this immediate perception of correspondences makes it materially easier to acquire a class concept as the substrate of the common attribute.

A child twenty-one months old runs around the room, touches every chair while each time repeating the question "this chair?" (= "is this a chair?"). Whenever he comes upon a seat that looks different, an upholstered armchair or footstool, the oral expression of the question becomes more doubtful and hesitant; classification of this object of lesser resemblance under the general thought "chair" is not achieved on the spur of the moment.¹

What we uncover in a single observation of this sort is only a sample of a process that is continually ripening with respect to all general thoughts; their clarification, narrowing, broadening, and displacement proceed throughout life; new experiences, corrections by perception, by other thought processes, by social contacts, operate so that the content of inner experience attaching to a general idea is not stable but highly variable. General thoughts, then, are contingent components of personal life itself and vary with it.

Serial formation plays an especially interesting part in a very important category of general thoughts, *thoughts of number*. In the infant the first intelligent use of numbers always develops with series of contiguous or successive objects of *the same kind*. If such objects are to be comprehended by *one* act of observation, the child proceeds to his first "concrete counting": two apples, two hands, three men.

Intermediate stages are necessary for comprehending the higher numbers. The child lays down real chestnuts one after the other and "counts": one, another one, another one; at the next stage the single members of such a series are joined with counting words thus far learned: one, two, three, four. These verbal symbols signify at first merely the place in the series, and represent "ordinal numbers"; a further developmental step is necessary to achieve the thought that the numeral last named also denotes the *number* of all members of the series, and is thus a cardinal number.² The abstract thought of "number" in general is not attained at once; it is restricted at first to certain groups of objects important to the person. Thus children are able to understand "two" for apples and hands and to express it intelligently, without being able to apply this number to houses or mountains. The counting systems of primitive peoples display phenomena entirely

¹ Compare here the far more primitive mode of behavior of animals in analogous instances, p. 321.

² Thus children may happen to count correctly the fingers of a hand presented to them, but be unable to answer the question: how many fingers does that make?

in keeping; for that matter, so too does the counting of civilized people here and there. There are semi-abstract designations of number like "brace," "quire," "pack" which are applicable only to certain definite groups of objects; and there are *magic* numbers like 3, 7, 13, which do not represent an indifferent quantity, but have personal symbolic character.

II. THOUGHTS OF RELATION

We have dealt with thoughts of relation (identity, equality, number) in so far as they are requisite for the production of thoughts of objects. But thoughts of relation may also appear independently as inter-objective and super-objective contents of experience. The notions of causality or similarity are inter-objective in so far as they constitute a bridge between several objects, and super-objective to the extent that they may be applied in an identical manner to any desired kind of objects.

In logic and epistemology those specific relations which are regarded as final, irreducible bases for the connection and classification of objects, are called "categories." Independently of the question of validity, psychology must describe these thoughts of relation and trace their genesis in the individual and the race.

I. PRECATEGORIAL RELATIONS

In so doing, we encounter a set of facts that again show clearly the difference between logical and psychological approaches; the very earliest thinking of relations proves to be *precategorial*. On that intellectual level where the individual commences to analyze objects out of the chaos of his vital world, it is not possible for him to place one single object in a clear-cut relation to any other single object; every object is still embedded in the totality of the world and partakes most intimately of everything else. The primitive relation in thought is thus not at all a coupling relation (which connects cause and effect, means and end, the two members of a "similarity," etc.), but a *universal* relation, a commerce of everything with everything else, or better, a not entirely complete sundering of the single object from the indeterminate wholeness of the personal world. At the same time the categorial *form* of this relation remains indeterminate. One object is conceived as both similar to and identical with another. Two phases of a process are thought of indefinitely as an effect proceeding from a cause, as an end served by a means, as a sign for what is signified. As in all phenomena of mental development, in relational thinking a condition of diffuseness and equivocality obtains at the start; only gradually are *specific* thoughts of relation attained through unfolding.

The person himself is also drawn into the chaotic, precategorial relation; indeed it is *originally* a question of the *self*-world relation, and only subsequently that of the relation of one portion of the world to another. Every single object, state and process that may become salient in the world, is concerned with "my *self*," and *I* am concerned with everything that takes place outside. A comet appears in the heavens or a cat darts across the road; the apparition is in some way thought of as relating to the destiny of the thinker, while it may remain quite indefinite as to whether these objects are causes or signs of coming misfortune, punishment for past deeds, or even identifications with the self. In reverse order an act of the self, e.g., a cult action, an oath, is determinate for the *world*; it may change the weather, injure an enemy, induce a result; while subsequent observation of the natural causal relation and critical testing of the correctness of the assumption may be entirely lacking.

We have here discussed the basic forms of *mystical and magical relational thinking*.¹ Thinking is called "mystical" when the pre-categorial total relation is emphasized, "magical" when the active participation of the self is brought to the fore. These modes of thinking rule on primitive levels; with uncivilized peoples and with small children. But they are not entirely lacking on higher levels of thought. With civilized man and even with scientists they form at least a substratum, superimposed by rational and categorial thinking, but which at times breaks through and manifests its own mystical and magical thought content.

It would be incorrect however to attempt to rank precategorial and rational thinking by the simple value terms "lower" and "higher." For purely rational thinking by itself involves the danger of a depersonalizing which the individual must constantly combat by returning to the personal background of thought. The most comprehensive systems of thought that man has ever produced, those of metaphysics in the broadest sense, are on this account always syntheses of both modes of thinking. Myths, religions, artistic portrayals of the world, and on the scientific level, metaphysical systems, are fed by the two springs of relational thinking, i.e., the total-inclusive and abstract-categorial, and consequently extend both into the subsoil of personal existence and into the heights of speculation.

In this connection exist such amalgamations of the two modes of thought as require rational thought really only to serve mystical and magical thought as an implement for forming concepts and systems. Mysticism, spiritism, superstition, queer sects of various kinds, are more or less the tarnished products of such thinking.

¹ For the literature see H. Werner and K. Zeininger.

Thus relational thinking offers the same double aspect as thought of objects. The course shifts between depersonalizing and personalizing; and each individual thought of relation occupies a definite position along the route, being at the same time personally embedded and categorially abstracted.

2. EQUALITY. DIFFERENCE. SIMILARITY

One group of thoughts of relation is erected upon acts of *comparison*, as in the categories of identity, equality, difference, similarity, gradation. We were able to indicate above how the notion of *identity* takes its origin in the constancy of self, that is, altogether in the personal area, and that the abstract identity of two concepts or the mechanical identity of inert and immutable substance occurs only at the end of a lengthy process of depersonalizing thinking.

The thought of *equality* originally signifies equal *value* under a personal aspect; exchangeability and substitution, non-relevance (subliminality) of differences, in the service of personal aims. This personal goal is only very gradually neutralized to what is called *tertium comparationis*; it finally subsides wholly into abstract mathematical conceptions of equality, so that equality becomes a purely impersonal quantitative relation.

Difference and "otherness." At bottom there is a primitive experience of disruption of the personal situation; a feeling of strangeness, disorientation, emotional shock; or lack, need, desire. "Otherness" can be experienced without acts of comparing. In the passionate protest "That must be changed!" in the declaration "you look so changed to-day," the condition, past or future, from which the present differs, need not be at all present in consciousness as a second term. The apparent paradox of a relation with a single term is resolved by the fact that at bottom I am thinking of the relation of the object to *me*, not to another object. But even when the second term of the comparison is also thought, "difference" and "change" are experienced at first as a vivid transformation within the personal world, as of prime importance to *me*, only gradually becoming depersonalized and formalized (in complete accord with the process for equality).

The personal stake in relational thought of *quantitative* difference is very evident; in notions of increase and decrease, "more" and "less," larger and smaller, etc., naïve thinking is imbued with an emotional experience of superiority or inferiority.

The thought of *similarity* involves a curious phenomenon. While in logic "similarity" is a uniformly reciprocal relation (*a* is similar to *b* just as *b* is to *a*), this is by no means true in psychology. In real life the relation of similarity is focussed one-sidedly upon the term which is personally the more relevant. Consequently I can say that

this (strange, accidentally encountered) man closely resembles my brother without being able to say the reverse, that my brother very closely resembles this man. The more alien and neutral to the person the terms of comparison become, the more pure abstract similarity is able to filter into thought as a reciprocal relation; in the mathematical principle of similar triangles, complete equivalence of the two terms is attained.

3. CAUSALITY AND FINAL CAUSATION

Another group of ideas of relation is concerned with terms that occur in temporal succession, be it that of cause and effect, or means and end. How are these relational concepts to be described psychologically?

That the thought *propter hoc* is something more and different from the thought *post hoc* is an immediately evident fact of psychological experience. Nevertheless at times a simple reduction has been sought. The best known example of this is Hume's psychological derivation of the concept of causality from bare association, which runs as follows: If one process frequently succeeds another in consciousness, a firm association is established between the two; this routine operates so that on the subsequent appearance of the first member the second is *expected*. In such cases we say that one process causes another.

We are not concerned here with the epistemological significance of this theory. Psychologically it is utterly inadequate. For the crucial fact remains unexplained, i.e., the metamorphosis of the experience: *b* frequently succeeds *a*, into the quite different thought *b* is engendered by *a*. The mere habitude of repetition is in itself in no wise concerned with the notion of cause. When an individual on rising, day after day, year in year out, is accustomed to putting on the left shoe first and immediately afterwards the right, the thought of cause never ensues; putting on the left shoe is not the cause of putting on the right shoe. No more has the continually experienced succession of twilight and darkness, and the fixed expectation that darkness will follow twilight in the future as well, ever given rise to the thought of comprehending darkness as an "effect" of twilight. If we further inquire from *what* kind of inner experience these first notions of causation develop, the reply must contradict Hume's theory of habit and expectancy. For in the interest of processes recurring monotonously in the even tenor of every day life, the individual *needs* no special category of thought; repeated connections are taken up by the bare feeling of familiarity; they make their own place in the personal world and in its magical nexus; they are expected as a matter of course, that is, without giving thought to them. (On this account the animal is not impelled to think

causally, his world being far more uniform and his life far more conservative.) *Questions as to cause are inspired rather by what is novel and unaccustomed*, by that which suddenly breaks into the familiar and natural, and for this very reason is alien, threatening, giving rise to anxiety or at least exciting astonishment. When purely vital responses (defence, flight, readjustment) are insufficient for mastering the novelty, *thought* steps in and seeks to subsume if it can the alien under the familiar; to treat the novelty as the effect of a known cause. Hence causal thinking of primitives sets in in the face of extraordinary natural events which threaten existence, like tempests, earthquakes, conflagrations, sickness; at outstanding turning points of life such as birth, puberty, death; in difficult decisions concerning the individual's destiny; and on the occasion of social phenomena that interrupt the course of daily life, like war and uprisings. The child's first questions as to causes likewise refer not to the normal but to the unaccustomed.

"Does the sun make my fingers bloody?" asked a boy of two years and eight months when he noticed for the first time in his life that his fingers, held before the sun, shone with ruddy translucence. How could this boy ever have been able "on the basis of habit and expectation" to surmise that the sun and the appearance of the fingers were causally connected?

This confining of causal thinking to what is new and relevant for the person is relinquished only very slowly as the capacity for abstraction advances; constantly widening circles of experience lead to abstraction in the *scientific* principle of causation, according to which *every* occurrence becomes inevitably linked in the chain of universal causality.

In terms of *content* of thought depersonalizing of causal thinking proceeds through numerous developmental stages. The first inter-relating of two sequential items that transcends the mere temporal sequence is the connection between *my deed* and its immediate consequence in the experience of "making something happen." This original *union of doer and deed* is at once a unified experience of observation and also of personal self-assertion; the relation of doing is also a relation of *potency*.

Even the year-old child, on knocking over the tower built by his mother, has the awareness "I did it"; simultaneously he experiences some such connection in the reverse order: mother gives me food, the corner of the table gives me a sudden crack in the head. These examples already reveal a generalizing of "making things happen" in which we can discern the first step in abstract causal thinking: *All changes that concern me (actively or passively) are "made to happen."*¹

¹ See W. Stern's *Psychology of Early Childhood*, and Piaget's publications.

For a long time thereafter causality cannot be conceived as anything but a relation of "doing" or "making." This primitive level is attested by the creation stories and mythologies of folklore, according to which weather, individual destinies, racial history, indeed the whole world, are made by divine powers, daemons, enchanters. The same point is illustrated by the child's interest in causation when he comes to inquire how and by whom trees, animals, houses, diseases, etc. are "made." At the same time his own experience of *personal potency* increases and broadens; that is why *technological* and *artistic* causal connections become general models for naïve causal thinking.

Also characteristic of this level of abstraction in causal thinking is the non-differentiation of the dynamic and teleological factors. Not only is active *force* in general trained upon the *goal* to be reached, but the goal is already anticipated in consciousness as the "task." The naïve thought of cause thus includes in a diffuse way both the *causa efficiens* and the *causa finalis*. The cause is conceived as purposiveness charged with power, the effect as deliberate application of force.

A further step in abstraction leads to the *differentiation* of these two factors. On extension of the mental horizon more and more instances of discharge of force by the self and by other sources of power become manifest, in which the effect at least cannot be laid exclusively to an appropriate goal-striving; *blind force* becomes recognized as a causal principle. On the other hand the individual's growing ability of foresight and anticipation occasions the attempt to conceive of "directed" forces which are able to bring about a future effect; the *means-end* relation emerges from vague primitive causation.

The relational thought of "blind forces" assumes its most inclusive abstract form on the level of naïve thinking in the conception of the blind rule of *fate*. In science the notion of *mechanical* causation has had a strong and many-sided development—to the point of self-dissolution. For in modern physics the qualitative peculiarity of the "cause-effect" relation has been exterminated completely and has been replaced by the depersonalized concept of lawful correlation of two events.

The thought of *purposive* causation (the means-end conception) has developed in four large domains of thought, each time in a special manner.

The domain of true "making things happen," with which we are already acquainted, has widened immeasurably. Economics, technology, finance, therapy, education, etc. exist only because means must be deliberately sought, arranged, and thrown into play for ends that in part lie in the distant future, and because other means are needed for actualizing those chosen. The natural technique of every day life,

like all practical arts, is permanently under the sway of means-end thinking; but such individual applications are possible only because the person has capacity for *thought of more abstract means-end relationships*, which occur in the form of rules of life, maxims of experience, ethical principles, legal norms, therapeutic and educational methods. Common to all such means-end thinking is the duality of doer and deed; it is a teleology that operates from without.

In contrast to this there develops in the domain of *organic* life experience the thought of "inner" (immanent) teleology. In all organic self-preservation, development, self-regulation and self-recuperation, means are set at work which are not opposed to their ends as something alien and external, but which together with them comprise one identical whole. In his growth and maturing, his breathing and feeling, in his sickness and recovery the individual continually feels his own potency, his own vital processes. This experience of an inner causality was later widened to the general thought of organic goal-directed causation; the vitalistic and hormic doctrines in biology and psychology represent the highest developed forms of this kind of causal thinking.

Self-reflection has discovered and worked out a third domain of means-end thinking which belongs intrinsically to the person; it extends far beyond the merely organic area. It is the location of the person *with respect to values*. Values make up a world of thought having content meaningful in itself, which places demands before the individual. Here the pattern of the means-end thought is that of the *task and its accomplishment*. To the domain of this highly specific *personal* notion of causation belong the relational thoughts of motivation, decision, duty, freedom, responsibility, accountability.

Finally the domain of the objective realization of value, independently of the particular persons involved in it, becomes an object of means-end thinking. The attempt is made to work out conceptions of causality for humanity.¹ These are in part dynamic in nature in that they express the "moving factors" of cultural and social activity; they are in part more teleologically directed in that they anticipate the "outcome of history," and attempt to understand the past, to appraise the present, and to influence the future in terms of this ideal goal which has yet to be realized.

III. MEANING

The separate thoughts of relation which we have just considered in isolation are never independent of one another in *actual thinking*; they are embedded in *one complete pattern of thought* which we designate as "meaning."

¹ In German, *Der objektive Geist* ("The objective spirit.")

Perhaps I read a sentence in Nietzsche: "You ought not only to propagate but to aspire." I thereupon think of a number of relations; a forward and upward spatial direction; the symbolism of these two spatial directions;¹ the opposition, complementing, and the climactic relationship of the two contributing thoughts; the normative relation contained in the "you ought"—but all these thoughts do not add up to give the "meaning" of the sentence; indeed it might be possible for me to make someone else understand each individual part-relation without his comprehending the meaning as a whole.

The peculiar nature of such "meaning as a whole" cannot be determined by definite logical categories nor expressed accurately in words, any more than the intrinsic pattern of a work of art can be adequately described.

The *formal* aspect of meaning, to be sure, can be circumscribed by the term Gestalt but that is all. In the "meaning" of the above sentence (or in the "meaning" of the Faust drama etc.) the numerous single thoughts of object and relation are of course moments within a particular structure in thought, in which the weight and intent of the individual items are determined by the whole. There are dominant and supporting part-thoughts, there are tensions and interweavings between the thought factors; all these are categories typical of Gestalt psychology.

But the true meaning of "meaning" is approached only on referring to the *dimension of depth*. Just as the person has "depth," so too has the world "depth" for the person.² Those experiences which arise from immediate contact between person and world have a surface aspect, but they bespeak another aspect which lies behind it, and the endeavor to pry into the second is called seeking the "meaning" of person and world. Compared to the deeper meaning or "sense" thereby sought, sensuousness is not alone superficial, but so too are ideation and thought in so far as they extend to single objects and single relations.

This signification of thought-of-the-meaning holds for the depths of the person as well as for the world; one may seek to substantiate the meaning of one's own existence, of one's own destiny, and likewise the meaning of the world, the meaning of nature, the meaning of history, the meaning of nationality. Such thought-of-the-meaning may moreover be directed upon the macrocosmic and the microcosmic; one may ponder over the meaning of Goethe's *Faust* as a whole and over that of a single quotation from *Faust*, over the meaning of mathematics and of the Pythagorean theorem, over the meaning of one's

¹ More distinct in the German wording: *Nicht nur fort sollst Du Dich pflanzen, sondern hinauf.*

² See p. 93.

own life, and over the meaning of a single action that one has committed.

The activity in which this thought-of-the-meaning is fulfilled is called *understanding*. This makes clear the *psychological* difference between the two activities of thought which play opposite parts in modern scientific theory, as "explanation" and "understanding."¹ *Explanation* is the application of causal thinking to a definite object of thought, it being immaterial *which* of the various forms of causal thinking is employed; it is sufficient that the single item be thereby classified under a known connection. "Understanding," however, is comprehension of the intrinsic meaning. Whoever would "explain" Napoleon must seize upon something outside of Napoleon himself; upon his ancestry, his milieu, the historical circumstances in which he was placed. Whoever would "understand" Napoleon must make every single detail that he knows about Napoleon transparent, as it were, in order to bring forward the essential significance of his life. And one who has explained Napoleon may have but an exceedingly scanty understanding of the meaning of the phenomenon of Napoleon.

Let us turn again to narrower meaning-contexts, such as single sentences, theorems, actions. What we suggested hypothetically for the sentence from Nietzsche above is very frequently the actual case; the single object-thoughts and relational thoughts in a meaningful context become fully formulated without the context of the whole thought structure being understood. Thus a pupil may comprehend the individual steps of a mathematical theorem, and see that from the assumption *a* the consequence *b*, and from the latter the corollary *c* can or must be concluded; nevertheless the total meaningful context may remain shut off from him. Much the same holds true for a literary production, such as a poem, the separate thoughts of which—and perhaps the superficial relationship of the general progress of thought as well—may be thoroughly comprehended, while the "deeper meaning" remains entirely below the threshold of understanding.

There are intelligent people who do not understand jokes. They assimilate completely all the contributing thoughts and their connections, but contrive no understanding of the "point," that indefinable surprise meaning which the *whole* possesses. So too in solving riddles there is a special appropriate talent; a kind of intuition for discerning the common point upon which the variously arranged threads in the statement of the riddle converge.

The reverse is also in evidence. Sometimes a child laughs heartily at a joke, though he does not understand the separate steps. Yet somehow the meaning of the joke to *him*, which is independent of

¹ See p. 18 f.

our prerequisites, is there. This fact has a more general significance. There is a kind of anticipatory "understanding" that precedes the comprehension of the single items, but rather enables the thinking individual to clarify the details. Thus for example all *guesses* and *hypotheses* are possible only because an unverified total meaning anticipates the separate relations which must be discovered.

One final important consequence proceeds from the depth dimension of meaning. Meaning may be arranged in *different* degrees of depth; one and the same object of thought may possess variegated content at different levels; different people may draw out the meaning of an object of thought from quite different depths and also from extremely divergent directions.

On reading *Faust* for the first time, one may think that he has understood the total meaning (or better, *a* total meaning), yet how many details remain uncomprehended; how much of the former meaning is clarified only on reading another time! And when the second reading is concluded, another, and deeper total meaning has been acquired.

CHAPTER XVII

DISPOSITIONS TO THOUGHT. THINKING IN MAN AND ANIMALS

I. INTELLECT AND INTELLIGENCE IN MAN

I. THE TECHNICAL TERMS

If we regard the disposition to think as a condition that is a permanent property of the individual, we speak of intellect and intelligence.

In the interests of clearness it seems best for purely psychological discussion to avoid terms that are burdened with relics of outmoded psychological theories and that were originally devised and defined from points of view which on the whole were logical rather than psychological.

This applies especially to the terms *Verstand* and *Vernunft* ("understanding" and "reason"). These come down from the German eighteenth century doctrine of faculties. Understanding and reason were regarded as inflexible and independent powers of mind that distinguished man from animals, which each individual received ready made; they were regarded as adequate causes of all thinking.

In present-day psychology the concept of disposition occupies the place of faculties, presenting those points of difference that we have defined elsewhere (p. 80). This is also true of thinking. Since potentiality for thought is an essential feature of human existence, it is not only possible but even necessary to speak of a *disposition to think*.

Both direction and instrumentality are involved in any disposition. If the directional factor is emphasized in the disposition to think, it is called intellect; if the instrumental factor is emphasized, it is called intelligence. *Intellect is the readiness for carrying on thought, intelligence is the capacity to do it.*

There is a certain arbitrariness attached to this verbal delimitation, yet the derived adjectives are proof that the usage of language tends toward such a distinction. The *intellectual* man is one who turns toward intellectual things and who lives chiefly in the sphere of intellect, independently of the degree of his endowment. The *intel-*

ligen man is one who is well equipped for feats of thinking, regardless of whether his interests lie close to the intellectual sphere.

Again, the term "intellect" is more appropriate for designating the generic fact that every human being has the tendency to think, while the word *intelligence* has become assimilated into international usage for describing the differential fact; that is, for designating the different degrees and kinds of ability to think.

2. THE PERSONAL SIGNIFICANCE OF INTELLECT

a. *Instrumental significance.* Thought is the means of dealing with that which cannot be taken for granted. In so far as the person-world relation persists in the area of the self-evident, whether racially (heredity) or individually (mneme), the individual has no need for thought. But he lives in what is to a great extent a world that cannot be taken for granted; its circumstances and situations are continually changing, he is forever confronted with new demands, dangers, and problems which challenge the purely conservational forces of instinct, tradition, and habit; in order to continue adequate in the face of the world, the individual has to think.

It would nevertheless be wrong to conceive this relationship as purely reactive, and thus consider thought as a form of the "struggle for *existence*" that is made necessary by the insecurity and instability of the world. The incessant unbalancing of the person-world relation is instigated not only by the world but also by the person himself, in whom resides besides mere self-assertion, the tendency to *self-development*. The spontaneous urge for development, however, cannot content itself with any existing and habitual person-world relation, but seeks to transcend it and to enhance the mastery of the world by the individual.

As to the former doctrine, which regards the intellect as a mere reactive disposition, we can distinguish two roots. The objectivistic, i.e., biological, approach views all human behavior, *including thinking*, as the outcome of natural selection, or continuous adaptation in the self-preservational struggle for existence, and describes its functioning as a chain of simple reflex processes (theories of evolution, reflexology, behaviorism). The subjectivistic theory represented above all by depth psychology sees in thinking merely a "subliming" of primitive urges and instincts, so that intellect, directly or otherwise, serves the same generic ends toward which the system of instincts is directed.

Such theories may be utilized for comprehending essential features of *primitive thinking*; for this is firmly attached to natural vital needs. Practical primitive thinking as an *Umweg* for gratifying instinct, magical thinking as a means of securing the self against the sinister uncanniness of the world, the vague amalgamation of primitive

thought with wishes, dreads, and hopes—all this may be understood in terms of its biological or instinctive background.

But as soon as the *more elaborate* accomplishments of intellect are brought into consideration, this derivation from the purely reactive sphere of self-assertion is no longer sufficient. Man is more than an adaptive creature in the passive sense, striving not only to adapt to the world, but also to adapt the world to him; to his constantly growing, maturing, and developing personal sphere. Even when the *world* remains constant and situations are repeated, purely mnemonic processes are inadequate for man (though they may suffice for animals), for *he himself* is always another being and must consequently continue to come to an understanding with the altered person-world relation by means of *thought*.

This is true of every day routine. The striving after enhanced standing and power, dominion over constantly widening environmental areas and temporal intervals, activates the intellect far more intensely than self-preservation alone could do. And the highest forms of intellect rise from man's spontaneous "introceptive tendency," i.e., the urge to incorporate in himself the objective values of the world and thereby to enhance permanently his own intrinsic value. From this situation (and from it *alone*, not from any biological motivation whatever) may we understand the function of the intellect in the service of artistic, moral and scientific aims.

b. *Radial significance.* The intellect, then, is far more than a mere instrument; it takes on radial (symbolic) value and becomes the characteristic expression of a being who opposes his own urge for self development to a world that has become insecure.

In his capacity of thinker, man is not simply sacrificed to the forebodings and problems of the world and himself, nor does he ever become finally adjusted to them, but is in a constant struggle with them. He is rooted in the primordial soil of the animal and vital domain, the disturbance of which arouses the first germs of thought; he also inhabits the realm of objective value in its most abstract aspect; his thinking keeps leading from practice to theory and back again, embracing both self-preservation and self-development, oscillating between concretizing and deconcretizing, between personalizing and depersonalizing. Man as a thinking creature, being *homo sentiens* as well as *homo sapiens*, evinces in his nature the true radial significance of human intellect.

II. DEGREES AND KINDS OF HUMAN INTELLIGENCE

I. THE SIGNIFICANCE OF INTELLIGENCE TESTS

The *differences* in the human capacity to think form primarily a topic in *differential psychology*. But investigations of differences

in intelligence have come to occupy so much space in the psychological work of the present century, both methodologically and practically, that general psychological theories of intelligence are not unaffected by them.

These investigations took their departure in France at the turn of the century when Binet (in collaboration with Simon) set forth his system of testing in the psychodiagnosis of backward school children. This system was then made serviceable for other purposes and came into international use. Thereafter the problem of intelligence has subsequently been worked upon chiefly in Germany and the United States. The institutes conducted by me in Breslau and Hamburg, and Terman's laboratory in Berkeley, comprised the focal points for these investigations, but other scholars in many countries (e.g., Spearman in England) have had a part in it. Especially in the United States have intelligence tests found extensive application.

Since these investigations were for the most part conducted with an interest in practical educational activity, they are determined principally by points of view of genetic psychology.¹

Based on the model of the Binet-Simon system revised series have been developed which range from tests for infancy up to tests for adolescence (Terman-Stanford Revision, F. Kuhlmann, Otto Bobertag in Germany etc.). Special series of tests for the pre-school age have been devised by Bühler-Hetzer, Descoedures, Gesell, Rachel Stutsman (Merrill-Palmer scale) and others. Methods of investigating the intelligence of adults have been worked out chiefly by psychiatrists for their own diagnostic purposes; these cannot be mentioned here.² Especially worthy of mention are the extensive systems for testing adults (including illiterates) that were utilized in the United States during the war and were later enlarged and improved for other purposes.³

The practical *purposes* for which these tests were devised include investigations of the mental standard of children for entering Kindergarten and school, and for various kinds of schools and grades in school; *diagnostic* determination of the differences in intelligence of children in a class at school; commitment of children and adults to mental hospitals and institutions for the feeble minded; diagnosis of neglected, delinquent, and problem children, adolescents, and adults; determination of degree of intelligence in the interest of *vocational guidance* and personnel selection; examination for military service; for forensic purposes; distribution of intelligence in a population.

The excessive enthusiasm with which these methods were at first greeted has now given place to a more reserved and critical approach.

¹ G. H. Hildreth is the author of a bibliography of the American mental tests and rating scales up to 1933. A manual including more than 400 methods used in Germany for testing the intelligence of children was issued by William Stern and Otto Wiegmann in 1926.

² Many of these methods are brought together in Lipmann's handbook, 1922.

³ See bibliography under Yerkes.

This is only to be welcomed. For a time there was seen in intelligence testing a universal method that could accomplish everything and supersede all other methods of appraisal in education, psychiatry, and vocational selection. This was a mistake which impeded the legitimate application of these tests. We now know the value and significance of intelligence tests when they are constructed as elastic *partial* methods in many-sided diagnostic investigations, and when applied as *auxiliary* methods in making intensive psychological analyses.

2. DEFINITION OF THE CONCEPT OF INTELLIGENCE

"Intelligence is the personal capacity to meet new demands by making appropriate use of thought as a means."¹ This definition, which to be sure was attacked from many quarters, has nevertheless proved the most apt. It requires only the briefest of comments since it merely sums up what has been set forth on thought in this book. It is the task of intelligence (in contrast to memory) to meet *new* demands imposed by life, by making appropriate use of the means of thought at hand. Hence being able to think is in itself not intelligence; intelligence is the selective application of the means in the right place and in the right way. "Being unintelligent is not only thinking too little when with more thinking a better result could be obtained, but also thinking too much when with a lesser expenditure of thought the same or even a better result could be obtained."²

The question is much disputed as to whether intelligence is one *unitary* function or the sum of many separate functions. Many psychologists (e.g., Theodor Ziehen) assert that different tests yield very different results with one and the same individual, that a good capacity for abstraction, average combining ability, and scanty critical ability might thus be demonstrated simultaneously, and that intelligence is therefore not a unitary disposition. Otto Lipmann even demanded that only the "intelligences" of a person be spoken of.

In opposition to this point of view, that of unity was advanced from other quarters. Spearman appealed to the results of correlations: If a considerable number of individuals be examined by a battery of intelligence tests, an observable correlation results; according to Spearman this permits the conclusion that a "general factor" (*g*) exists in conjunction with certain special abilities.

I combine these experimental findings with personalistic considerations. Viewed in his totality, every person has without doubt a certain *intellectual level*. Folk psychology had the proper notion in employing the designations "clever" and "stupid." The "level"

¹ W. Stern, *Intelligenzprüfung*, p. 344.

² *Intelligenzprüfung*, p. 345.

is of course not of an even height like a plain which would give all contributing functions the same altitude. Rather has it many elevations like the modeled relief of a high plateau; the peaks and drops present in it variously affect the performance on the different tests. This *profile effect* is conditioned by the fact that "intelligence" does not function independently as an inborn disposition, but is colored and codetermined by interests and traits of character, by habit and external influence. This does not prevent one from taking the average height of the whole profile as a characteristic quantity for the person. Only it must not be supposed that two people of the same level of intelligence must be equal throughout in separate intelligence functions.

3. INVESTIGATION AND TESTING OF THE DEGREE OF INTELLIGENCE

"Rigid" and "elastic" test series have been devised for testing the degree of intelligence. In the rigid systems the tasks and measures are established once and for all. The principle by which the system is constructed is in most cases that of gradation by age; this is the principle of the Binet-Simon method. Other principles cannot be discussed here.

In the systems using age gradation tasks are laid down for every age of childhood corresponding to the normal performance of these ages. If a child is tested with this series the level of accomplishment that he attains (his so-called "mental age" = MA) may be compared with his chronological age (CA). Binet chose as the measure of intelligence the difference between the mental age and the chronological age; nowadays, following my proposal, the ratio of the two values is generally calculated, giving the *intelligence quotient* $IQ = \frac{MA}{CA}$. For the normal child this value is equal to 100.

Example: An eight-year-old child completes the tests for six-year-olds, but fails at the tasks normal for those from seven to eight years old. CA = 8, MA = 6, the intelligence difference (following Binet) MA - CA = -2, the intelligence quotient $IQ = \frac{6}{8} \times 100 = 75$. Crudely expressed, the child has "three-quarter intelligence."

The IQ of a child is approximately constant in value over a number of years and may therefore be used as the determined level. To be sure, it furnishes only a very crude characterization, since the bare coefficient leaves out of account the profile schema of intelligence. The IQ may be regarded only as a first approximation; it takes on significant value only when the bare quantitative statement is completed by a qualitative diagnosis. To base any pedagogical estimate

upon the IQ alone for practical purposes (e.g., for assignment to opportunity classes) is indefensible.

This measurement is also of value for the purposes of group statistics. The simple administration of the method permits the testing of very large numbers of children of various ages and of adults as well, and the comparing of the group results.

We may enumerate here some of the results obtained in this way. If a large unselected group of children is tested and classified as to intelligence quotients, a *frequency curve* corresponding to the normal Gaussian curve results. That is, the IQ of 100 and the values nearest to it above and below 100 occur most frequently; beyond this range the curve drops off at both sides, first slowly and then more rapidly; the highest and lowest grades of intelligence are very infrequent.

In comparing experimental intelligence scores with *medical* diagnoses we find inconsistency in the medical terminology of different countries. There is agreement that normality extends down as far as IQ = 90. Between 90 and 80 are the cases bordering on subnormality. But as to express mental deficiency there is much controversy. German investigators ascribe to "debility" a "three-quarters" intelligence centering around an IQ of 75, to imbeciles a "two-thirds" intelligence scattered between 60 and 70. Following American authors there is a much wider range of IQ's. L. S. Hollingworth, for instance, says: "Idiots grade roughly from 0 to 20, imbeciles from 20 to 40, and morons from 40 to 70." Also the mental ages have likewise been related to the different groups as follows: The mental age that can never be exceeded is two years for idiots, seven years for imbeciles, and twelve years for morons.

If the two *sexes* are compared, age, milieu, and school being equal, no noteworthy difference in the group averages of intelligence quotients are revealed. (This result shows clearly the inadequacy of the bare coefficient, for in profiles of female and male intelligence there are differences that are noticeable even in infancy, but which drop out of this kind of calculation.)

Comparisons of children of different racial and national *descent* have revealed significant statistical differences. The racial mixture of the United States has afforded favorable opportunities for investigation in this regard. (As an example, the intelligence cross section of white children and adults is higher than that of colored people.)

Similar results were obtained from children of different *social* strata. The lower level of intelligence of the strata in a poor social position, for example, is plain when public schools in different districts of the city are compared; the average for poorer quarters falls off markedly in contrast with the well-to-do.

These results require the stressing of two considerations.

(1) They have significance *only* as group statistics, and imply nothing about single individuals. Scattering is exceedingly great in all groups; consequently within groups that are at a disadvantage there is always a number of individuals who stand out in comparison with advantaged groups and who even surpass the average of these. Thus some children from an underprivileged milieu are always to be found whose IQ's match or exceed those of gifted children in better circumstances; it is one of the primary functions of intelligence testing to assist in the discovery of such highly gifted children.

(2) The experimental findings yield the fact of difference in intellectual level of different groups, but in no way indicate the actual causes of this phenomenon. Tests do not test bare native endowment but the accomplishment resulting from the convergence of endowment with external influences. Although the particular tasks are chosen as much as possible to disclose individual ability rather than knowledge imparted directly at school, the unremitting influence of home, school, and street is not without significance. We therefore suspect that the backwardness of a group is neither the pure product of inborn inferiority nor a mere effect of deficient intellectual training, but that both factors are involved, in an unknown proportion.

While systems of age gradation gauge the performance with an absolute measure laid down once and for all, other methods of testing are content with *relative* measures, that is, with intercomparison of the children tested. Then there is greater freedom in the choice of tasks. Thus intelligence testing was carried on over a period of years in the Hamburg Psychological Institute as an aid in selecting gifted pupils for the higher schools; to this end different tasks were sought out every year and combined into test series. The point scores attained by the separate individuals tested could be compared with one another, the pupils having the highest scores being recommended to the school authorities for selection. The work of the psychologist becomes much more elastic through the use of such free test series; he is better able to conform to the demands of the moment.

4. TYPES OF INTELLIGENCE¹

The formation of intelligence profiles of different kinds leads to the setting up of *typical* forms of intelligent behavior. Four type-pairs may be plainly distinguished.

a. *Reactive and spontaneous types of intelligence.* There are people whose intelligence (even when of a fairly high degree) possesses a certain inertness and therefore requires outside impetus for its activation. These people can give their best in circumscribed and regulated

¹ Cf. *Intelligenzprüfung*, p. 18 f.

situations. People with a more spontaneous intelligence do not wait for opportunities, but throw their abilities into play by themselves. Their experience runs to problems with which they wrestle, they put questions and anticipate future problems by planning; even when the stimulus to thought comes from without they are not content with simple reactions, but develop the context further with independence.

b. Objective and subjective types. The basic person-world relation exercises a sway in this type-classification. Objective intelligence takes the actualities of objects as the rule for its own thought and action; subjective intelligence exerts upon objects those transformations, selections, and interpretations which conform to the needs of the person. This subjective behavior is "intelligent," to be sure, only when the *appropriate* relationship is thereby maintained between object and subject. This type-difference is related to the characterological distinction between extraverted and introverted people.¹

c. Analytical and synthesizing types. There are people who attack problems and tasks from definite isolated points of view, who attempt to produce the separate parts, concepts, and processes, notice errors and defects of detail, and are consequently truly critical in nature. In contrast to them are the synthesizers, who are moved to bring logical arrangement and unity into the chaos of separate items. Sometimes these synthesizers become mired in mere schematism. On the other hand constructive intelligence is necessary in large measure for any creative production.

d. Cognitive and practical types. One of the most important differences in intelligence was long overlooked by psychology because psychologists are themselves scientists and therefore usually belong to the *cognitive* type. As a result they confined themselves to that kind of thinking alone which is directly concerned with logical operations and their verbal expression, that is, with the functions of knowledge, understanding, combination and differentiation in thought, formation of conclusions, etc. Only when intelligence testing was placed more and more at the service of practical requirements of life was it acknowledged that by far the greater number of people belong to another type of intelligent activity. *Practical* intelligence² is evinced in making the means of thought immediately subordinate and subservient to action. The intelligent housewife or the intelligent mechanic may be awkward indeed when feats of pure knowledge, definitions, synthetic conclusions, are expected,—but when they are confronted with a novel practical situation that cannot be simply met with customary domestic or professional training, their thinking becomes mobile in the concrete area demanded by the moment.

¹ See pp. 443 and 444.

² The most important portrayal is by Bogen and Lipmann.

5. THE SEPARATE FUNCTIONS OF INTELLIGENCE

Unusually productive efforts have been made in the construction and standardizing of tests for the separate functions of intelligence. Since Ebbinghaus in the year 1897 introduced his method of completion of incomplete statements for testing "combining ability" which is still used today in various forms, countless tests have been devised for the most varied kinds of intelligent performance.¹

Sometimes the tasks, to be sure, are only indirectly concerned with intelligence, as when they are tests of spatial ability, observation, linguistic ability, attention, etc. Others, however, demand thinking as such; e.g., the contents of pictures or series of pictures must be apprehended and reproduced, a story begun must be continued, wrongly arranged words, sentences or pictures must be arranged correctly, the meaning of fables or proverbs must be given, etc.

Further illustrations of tests most used in Europe:²

(1) *Conjunction completion test* (after Minkus and Otto Lipmann). The missing conjunctions are to be inserted by the person being tested. "When we awoke on Sunday morning I asked my father if the sun was shining—if it was raining. —the weather was very beautiful, and it was—raining—snowing, we decided to take a trip. . . ."

(2) *Analogy test*. The fourth word corresponding to the three others is to be found. (The word to be found is here in parentheses).

Storm—Quiet	War—(Peace)
Arm—Elbow	Leg—(Knee)
Apple—Peel	Rabbit—(Fur)

(3) "*Masselon test*" (Three-word method). Meaningful sentences are to be formed from each set of three words.

rain, cold, smashed pitcher.

horse, bees, thrown rider.

railroad accident, stopped clock, joy.

(4) *Criticism test*. The absurd items in a statement are to be found and criticized.

(After Binet) "I have three brothers, Paul, Ernest, and myself."

(After W. Stern) "One man says to another, 'I have heard that you are descended from a family of knights in the time of the Crusades. Is it true?' The other replies, 'No, that's wrong, you have me confused with my father.'"

"The village church tower had burned to the ground a year before. In commemoration a memorial tablet was erected on the spot where the spire had been."

¹ The Stern-Wiegmann collection contains no less than 451 different tests.

² See also p. 238.

(5) The *Bogen Cage* (named for Hellmuth Bogen; see Fig. 12) permits the testing of practical intelligence without necessitating any verbal performance. A frame made of two wooden boxes contains several connected compartments and inclined planes. A wooden ball in the first compartment is visible to the experimental subject through a glass pane at the side and a grating at the front. The problem is to poke the ball through the maze from outside by means of the proper sticks in such a way that it finally rolls out of the opening in the last compartment (to the left below). Various sticks which may be selected at will are next to the frame. The test is very well adapted to the examination of people who are feeble minded, deaf and dumb, or with speech disturbance.



FIG. 12. TESTING PRACTICAL INTELLIGENCE WITH THE BOGEN CAGE

It should never, of course, be supposed possible to test a definite, narrowly circumscribed separate capacity of thought with any one of these tests. Other abilities are always involved. Thus the correct completion in (1) depends not alone upon understanding of logical connections between the parts of the sentence, but also upon the available vocabulary. In (3) imagination is coupled to a greater or lesser extent with logical combination.¹ In (4) besides "critical ability" in the narrow sense, understanding of language, the ability of expression, intellectual independence (which does not take every printed word for unimpeachable truth), and other things, are also tested.

¹ See p. 338.

Yet this is in no sense to be construed as a defect in the tests. On the contrary, they provide a favorable opportunity for observing the process of thinking in all its complexity. One must not be content to calculate the score for each performance. A completed test, which according to the system of scoring is thrown out as erroneous or deficient in performance, may very frequently result from the fact that *other* kinds of thinking than those expected have intervened, but which may have significance in terms of the subject's particular intellectual approach.

Thus for example in the Analogy Test (2) children often give unexpected solutions; they suggest words that are not in the demanded *logical* relationship to the other three. But sometimes it appears that the three given words produce in the child not a discursive thought process at all but a wholly concrete *imaginary picture* of a situation, then a word belonging to this situation by inner consistency is named.

It is very instructive to observe children at the Bogen cage (Test 5). One child will stare only at the ball, make a foolish attempt to bring it directly through the grating with the fingers, and then lapse into perplexity. Another child will first survey the total situation; it can be seen from the movements of his head and eyes how he anticipates mentally the separate actions before proceeding to carry them out. Large differences in intelligence are also revealed by the choice of implements; sometimes any stick is seized indiscriminately and retained despite its unsuitability; sometimes the implement is carefully picked out or changed after a first failure.

Summarizing these last considerations we see that intelligence tests are valuable beyond the mere production of quantitative scores. Being "correct" or "incorrect," successful or unsuccessful, is not the only important point of view. Careful observation during performance and searching analysis of the psychological processes leading to the test answer can materially deepen insight into the structure and functioning of intellectual abilities.

6. TALENTS

a. The nature of talent. Besides intelligence and its typical expressions there is another group of intellectual endowments: talents. While intelligence determines the total behavior of the individual, talent is *limited in content*, extending only to a partial sphere of the person. Thus one person has talent for language, another for music, another for mechanics, etc. One and the same person may even have several talents, e.g., mathematical and musical talent at the same time.

While talent is more limited in its circle of operation than intelligence, it is nevertheless more firmly attached to the person because it is not only an instrumental disposition, but a directional disposition

as well. Talent expresses the especially close relationship of a person to a cultural sphere, a relationship in which love for the object and the ability to master it are normally indistinguishably fused. It is consequently rarely possible to decide whether the inclination (for music, painting, building, rhetoric, etc.) has aroused and enhanced the corresponding capabilities, or whether conversely the special endowment has kindled the love for the domain.

Only in certain unusual instances is the connection between inclination and qualification loosened or even dissolved. Some people leave a strong special endowment unused because they maintain no interest in intensive preoccupation with the domain of their abilities. Conversely there is the "unrequited love" of a man for an activity for which he possesses no capacity whatever; however he may admire it, however passionately he may perform music or paint, his pains lead to no accomplishment worth mentioning.

At times, however, this aspiring brings results; the manifest outcome is what Individual Psychology calls "overcompensation for an inferiority." The very *deficiency* spurs on all forces for overcoming it, ambition, industry and training eventually producing respectable accomplishment. Thus among athletes people of originally weak constitutions are sometimes found, whose great success would not be possible except for a stubborn, unwearying struggle against their weakness. Similar cases may occasionally occur in intellectual spheres.

But in all such instances the assertion of Individual Psychology is to be doubted, that the original inferiority could be the direct *cause* of the later accomplishment. On the contrary, the struggle against the weakness is entered upon with such intensity only when other dispositions are *urgent*. The athlete of whom we spoke may well have an original athletic gift and inclination; having it, he will expend force assiduously in order to overcome the handicap of a weak constitution.

The constantly quoted illustration of Demosthenes may be interpreted in a similar way. As we know, Demosthenes had a strong speech impediment; from his stubborn efforts to overcome it by speech exercises his brilliant gift of oratory is supposed to be derived. Probably the opposite was the case, the talent for oratory, present as a directional *disposition*, freeing the powerful forces that were necessary to overcome the external obstacle.

Underestimating original predispositions is a characteristic feature of Individual Psychology, which delights in tracing all essential human proficiency to training and encouragement. In reality both factors make a contribution to human accomplishments.

b. *Frequency distribution of talents.* This question is also complicated by the tension between inner predispositions and outer influence. The percentage of people who are musical (or gifted in drawing, etc.)

can scarcely be reported because we do not know how much worthwhile predisposition remains unrealized through lack of training or suppression.

The development of talents also depends markedly upon cultural conditions and historical situations. As an illustration, the talent for drawing was badly neglected for a long time. When three decades ago Kerschensteiner investigated the drawing ability of all the public school children in Munich by means of tasks differing from the imperfect methods of teaching drawing, he discovered a number of talented young people who had escaped notice in school. In their time these psychological investigations contributed to the reform of instruction in drawing in German schools. Since then not only has pleasure in drawing greatly increased, but it has also turned out that numerous children who formerly passed as untalented, possessed noteworthy gifts for drawing. This does not mean, of course, that little Raphaels could be made out of all children by training. What is possible is the raising of the general level and the encouragement of neglected abilities.

We must judge from this point of view the assertion that there are really no "unmusical" people since everything depends upon musical education. In reality there are a number of people, small to be sure, who are hopelessly unreceptive to music and absolutely incapable of playing musical instruments; their "*amusia*" cannot be cured. But there is a very large number of people who take a certain pleasure in music and are able to attain a certain proficiency in singing and playing; for this group education is of far-reaching significance. The possession of true *musicality* however, is rare and will always remain rare. It is not acquired by learning; moreover it is not a simple ability (i.e., a talent), but the personal attitude of living in terms of music and not being able to live without music.

c. *Analysis of talents.* No talent is a simple unity; it comprises a considerable variety of separate abilities and tendencies. That is, talents too have *profile form*; two individuals who possess a certain talent in approximately the same degree may nevertheless be talented in quite different ways. The separate aspects of a talent may in part be measured by degrees.

Consider, for example, the enumeration of the separate abilities in musical talent which were given on p. 12; of these, pitch sensitivity and tonal memory may be measured by known methods. In recent times exact methods of procedure have been employed successfully in the testing of rhythmical and melodic ability.¹

¹ The studies and methods of Seashore, Révész, and Rupp may be mentioned among others, and of our work at Hamburg that of Prager on rhythmic ability and the comprehensive study by Brehmer of melodic ability in childhood.

We may mention one interesting finding. It was discovered that rhythmic ability is of firm native rooting and is consequently less subject to improvement by educational and developmental influences. While children's ability to recognize melodies and to reproduce them correctly plainly increases with advancing age, no considerable progress with age was demonstrated for rhythmic performance. Many very small children surpassed by far the average for higher age levels.

To special functions of a higher sort, like emotional excitability, understanding of music, the gift of composition, measurement is of course denied, and recourse must be had to qualitative judgment. The quantitative rank by which the abilities of a candidate for admission to a school of music are evaluated must be regarded as psychologically dubious. A composite picture of endowment can never be secured by merely summing up the separate accomplishments as a mosaic; on the contrary, the part played by a special ability depends upon the structure of the talent and its anchorage in the person.

There are different directions of artistic ability corresponding to the principal branches of visual art. Artists belonging to the "drafting" type like to accentuate sharp outlines and black and white contrast, though the "painting" type is characterized by favoring broad coloristic approach with fluent nuances of hue. Also a "plastic" and an "architectonic" type may be established. It is not at all necessary that an artist belonging to a certain type practice only the corresponding art: there are painters representing the drafting type, draftsmen whose works have an distinctly picturesque appearance, etc. From another point of view there are all kinds of gradations in relation to the visible world; pure copyists, naturalists, symbolists, expressionists. Such types of talent are of course dependent in part upon cultural trends and fashions; thus at a certain period the majority of all painters appeared to belong to the expressionistic type. But even apart from these influences there is an inborn tendency for talent to be activated in this way or that.

Viewed at large and in its entirety, the psychology of talents consists at the present time more of problems than of results. Much remains to be done in the future.

III. ANIMAL INTELLIGENCE

I. THE PROBLEM

Is intellect solely a human attribute? Is *only man* able to think, *but not animals?* In the position of present-day psychology, this question can no longer be answered so glibly with yes or no. There is indeed an intellectual barrier between man and animals, but this does not separate the ability from the lack of ability; it lies *within the ability*

itself, separating merely vital, concrete-practical, unformulated, immediately reactive thinking from super-biological, abstract-logical, verbally formulated, time-bridging, spontaneous thinking.

To be sure, even the pre-human primordial forms of thinking have been demonstrated with certainty only in a few very highly organized animal species and individuals, and in these only as relatively infrequent, as will soon be shown. All else that is regarded as "thinking" in animals depends in part upon vague guesses and for the rest upon flagrant misinterpretations of animal behavior. Where this behavior displays a superficial similarity to such behavior in *man* as may be executed only by exercising considerable thought, there is a tendency to assume corresponding "intelligence" for animals as well.

Man can make extensive journeys and build houses only by virtue of far-reaching planning, provision, and thoughtfulness. When birds of passage succeed in traveling long distances and in returning to the point of departure, when bees build their combs and birds their nests with utmost precision, are not these perhaps feats of thinking, all the more imposing inasmuch as the prerequisites ordinarily necessary (collecting experience, cultural diffusion, basis of verbal communication) are entirely lacking?

We shall concern ourselves elsewhere (in the chapter on instincts) with these feats; they do *not* belong to the realm of intelligence. For they are not a matter of coping with novelty, but on the contrary, of proficiency in meeting repetitive conditions of life; it is a matter of inner functioning, the purposiveness of which does not require thought because it is anchored racially in the deep hereditary strata of each individual. The noteworthy investigations of J. von Uexküll and others on animal environment have shown how closely the individual animal is in unison with its "world of perceiving and doing."¹ A creature that is definitely adapted to a uniform environment which is stable for many generations, has no need for *re-adaptation* to new environmental constellations by its own acts of thought.

2. INSIGHT

The problem of animal intelligence becomes more difficult with animals that are capable of *learning*. In "learning" one gradually acquires what one did not previously possess; something "new" comes into the individual's life. The chief stages of mnemonic accomplishment in animals, rehabituuation, familiarizing, domestication and training, have already been discussed elsewhere; there (p. 198) the point was located at which true problem-solving intelligence sets

¹ *Merkwelt und Wirkwelt* (von Uexküll).

in, along with the possibility that in higher animals these learning processes "assume a different pattern through insight."

The flash of insight in fact indicates a forward leap in animal learning. A careful observer can clearly determine from the outward behavior of an animal under training whether it is motivated merely by growing habituation or by conscious anticipation of the goal. Animals can doubtless have "aha-experiences" and suddenly transform their manner of executing actions from blind automatism into meaningful coördination of means and end. We are compelled to assign to this the very first beginnings of thought, despite our inability to report on the actual state of conscious contents.

The portion of thinking in actions complying with training is revealed by the fact that a certain *free play of action* is acquired. Thus Sarris trained a dog to jump into a chair and lie down at the words "get in the chair." The animal could execute this command when the chair was noticeably altered by a covering of paper, when it was pushed all the way under a table so that a different total visual image was produced, when the chair was replaced by a stool without a back, and even when, since neither chair nor stool was within the range of vision, the animal, in carrying out the command, made use of the lower shelf of a bookcase. Since very obvious intervals of *seeking* intervened between hearing the words and executing the command, the performance transcended mere reflex action or habituation; it was directed rather by a kind of *insight* "summons to find a place to sit."

But with this insight concomitant to the process of training the highest level of animal intelligence is not yet reached. In all training the connection of means with end is always *presented* to the animal from outside. Under certain circumstances, however, an animal may *discover* this connection for himself without being trained or taught; *new actions* of a meaningful sort can be carried out spontaneously. Their existence has been established chiefly in apes and dogs.

The experiments that Wolfgang Köhler performed with chimpanzees were of a pioneer nature. The animals were offered desired dainties (bananas) under conditions very difficult to meet, so that they could not procure them by instinctive means (grasping, climbing), whereupon they discovered by themselves new and appropriate ways of reaching the goal, making use of available objects as implements. Thus a bamboo stick served as a rake; and when *one* stick did not reach, an especially intelligent ape lengthened the tool by thrusting one stick into the end of another. In order to attain a desired object that hung from the roof, a packing box was shoved under it and a second one placed upon it. Sarris laid a piece of meat under an inverted tin pail before his dogs' eyes, weighting it on top with stones.

While the less intelligent dogs were unable to succeed in their persistent vain attempts to overturn the pail directly at its lower rim, where they smelled the meat, some of the dogs of their own accord recognized the stones as obstacles and first knocked them off singly (each time ascertaining whether the pail could be moved), and finally reached their goal in this way.

In all these instances training and habituation were sedulously avoided. It is possible indeed for the animal to reach the goal through his incessant and at first random movements, by *accidentally* hitting upon the appropriate movement; but in such cases it is worthy of note that subsequent actions obviously occurred on the basis of insight.

3. THE LIMITS OF ANIMAL INTELLIGENCE

The highest forms of animal thinking are of great significance for problems of human intelligence. In developmental psychology they are revealed to be closely similar to the most primitive forms of human thinking as can be observed in the infant during the last months of his first year of life.¹ But from this moment on the divergence sets in.

Since we know what animal thinking can accomplish *at its best*, the *limits* marking it off from fully developed human intelligence may be clearly defined. The following are the principal points of difference:

(1) True feats of thinking in animals are only *exceptional* accomplishments, infrequent events in a life otherwise free from thought. Consequently they are not as extensive as in human beings.

(2) Thought occurs in animals only in exceedingly close connection with strong biological needs and then only when the need cannot be gratified by a direct path. For the animal, the expenditure of energy necessary to an act of thought proceeds from a need that is denied immediate satisfaction. We have seen that the human intellect very soon passes the boundaries of the vital sphere, sets and pursues objective aims, and finally creates in theoretical thinking an independent, unique realm. There is not the least trace of this present in animals.

There was at one time a lively discussion about animal intelligence in some of those areas that are in no way connected with the animal's biological needs. Thus "talking" and "calculating" horses and dogs attained for a while a certain fame.² These animals allegedly learned to give a number, by stamping with the hoofs or paws, as the answer to a visually presented arithmetic example, or the number of the position of a letter in the alphabet, and to form words by this "method of spelling." Even the extraction of cube roots, the spelling out of a strange name

¹ See *Psychology of Early Childhood*, p. 85.

² Of the extensive literature we mention the book by von Osten on "Clever Hans," the publications of Krall and his associates on the "Elberfeld horses," and the complete repudiation by O. Pfungst which is based upon intensive experiments.

spoken once to the animal, and similar achievements, were supposed to be possible by this means. In reality the animals simply learned to stop stamping on the appearance of involuntary attitudes of tension and expectancy on the part of the "teacher" when the critical stamp of the foot takes place. Even if it be thought possible that horses and dogs are capable of certain feats of thinking within their biosphere, the absurdity will have double force, that they should extend their thinking to such utterly extraneous areas, so far removed from their animal nature, as calculating and spelling, and that they in no way make spontaneous use of their unheard-of ability—as would be expected of genuine thinking—for vital requirements.

(3) Animal thinking is of a thoroughly *concrete* nature; a concrete solution is sought in a concrete situation. Though we spoke above of a certain "generalizing" (by the dog who treated various kinds of objects as chairs at the command "get in the chair"), it was in no sense that process of abstraction that led to the "general" concept *chair*, but there was merely a certain leeway in practical action. No dog arrives at the "thought": a chair is a place to sit on (independent of its contingent form). This incapacity is identical with the incapacity for speech; we saw above that one prerequisite for any speech consists of possessing signs for fixed, independent thoughts abstracted from the accidents of the moment.

(4) Animal thinking is thinking *in the present*. That the "present" is not a point, but the time span of a cohesive, unitary event, is a fact previously discussed. Within such a narrow compass of time, to the ape who cannot reach the bananas directly, these bananas continue to be "present" (the goal of the need) even though he momentarily turns away from them in order to cast about for a tool with which to fish for them. But if he is very thirsty and it begins to rain, he is incapable of putting a coconut shell out in the rain with the object of collecting in it enough water to drink *at some later time*.

To be sure, animals too are provident (e.g., in collecting stores for the winter, in building honeycombs for the coming brood, etc.,); animals also commence actions in distant prospective (the flight of birds of passage southward). But these preparations for the future are of a thoroughly instinctive nature in animals, and are thus *not* accompanied by planning and conscious prearrangement.

When it is considered that human thinking nearly always reaches beyond the present, that by calculated, anticipatory, providential thinking man projects himself far into the personal and even transpersonal future, and that this ability and desire to take thought for the morrow is his first credential as a being with a personal history, then the enormous gap between animal and human intelligence can be fully appreciated.

CHAPTER XVIII

IMAGINATION

I. THE NATURE OF IMAGINATION

I. CONSCIOUSNESS ASPECTS

The demarcation of the function of imagination encounters a peculiar difficulty. As long as one keeps to the description of the *conscious* contents one finds merely attributes that also appear in other mental provinces. It is only on extending the consideration to problems of personal significance that the true distinctive criteria become prominent.

As to mental content, imagination belongs principally to the category of *images*; since experiences of imagination are concrete in their very nature they are to be contrasted with memorial images or anticipatory images. If we select such imaginary fabrications as "fairy" or "winged horse," no feature is present in the content of the images by which they are necessarily distinguished from an image referring to a real woman or to a horse that was once seen.

There may obviously be psychological differences of *intended reality*. Many states of fantasy involve the awareness that they correspond to no objective reality, and that they belong to a fictitious world. But this fact, though very important, does not provide the attribute we are now seeking, which marks fantasy images off from all other ideas. For the awareness of *unreality* is very frequently lacking, as in the recollections that are falsified by extravagant fancy, in the fabrications of the insane, in the air castles of dreamers, in dreams themselves, and in the manifold varieties of imagination in children.

Is there perhaps some psychologically characteristic *mode of appearance*, which imagination and it alone possesses?

As we know, it is customary to distinguish "intuitive" and "discursive" processes in mental activity. In the former, the separate constructions are borne along with evidence that is incapable of substantiation and does not require it; they appear all of a sudden without conscious provision and in complete, concrete shape, sometimes with the vividness of genuine perceptions. In the discursive process, on the contrary, each aspect is slowly and progressively developed from the

preceding aspects, the whole being rationally constructed from the parts. Without doubt, imaginative occurrences are predominantly intuitive, while contrariwise, occurrences in thought are of a strongly discursive character. But it was shown previously that thought does not take place without intuition, which as "inspiration" may even acquire independent significance. On the other hand, imaginative processes, especially those of a more extensive sort, are not possible at all without discursive guidance. Moreover there are images in other domains of mind, e.g., in memory, which appear without conscious provision (that is, "intuitively"); these are called free rising ideas. And so this approach can not be used as a *crucial* criterion of "imagination in general."

2. THE PERSONALISTIC APPROACH

a. *Disagreement with the objective world.* Only a personalistic approach unmasks the true meaning of the concept of fantasy, since this bears upon the *person-world relation*. One speaks of fantasy when the object-intention of human images is in opposition to what is objectively present. At the outset this definition has both an external basis and a negative boundary: *Fantasy or imagination is the individual's realm of images that are inconsistent with the objective world.* "With the objective world;" this may sometimes be practical reality in which factual laws acknowledged by all hold sway; it may be the world of human society, whose convictions and values are supposed to be shared by every member; or it may be the world of scientific knowledge which becomes the purer the more it is desubjectified. In so far as the concrete imagery of an individual does not coincide with objective claims of this sort, it is "fancy," and the personal world that is built up of such fancies is a "world of fancy," a non-objective world. While *insight* into this lack of objectivity of his images is not necessary to the imaginative individual we now observe that non-objectivity of his imaginative content is essential.

This characteristic leads readily to a *deprecation of imagination*, especially when the measures of value of practical, social, or theoretical objectivity are alone dominant. There are situations in which imagination may become dangerous because everything depends upon the agreement of conscious contents with reality, as with reports of past matters of fact, decisions in regard to subsequent actions, the verification of scientific hypotheses. The imaginative witness, the imaginative executive, the imaginative investigator, may bring about much damage.

Moreover, there are *types of people* who are so constitutionally realistic that they undervalue imagination because they see in it only the inconsistency with reality and with the demands of general

values; these are factual people, cautious observers, pure doers, philistines, pedants on the one hand, principled people, moralists, pure theorists, logic worshippers on the other.

But this negative evaluation of imagination is possible only so long as the person-world relation is viewed merely from the objective side, that is, externally. It is at this point that the personalistic concerns in the narrow sense first arise. How is it possible for every person to have a world of images that is in disagreement with the objective world? (Question as to cause.) What does this non-objective world of consciousness signify to the person himself? (Question as to meaning.)

b. *Spontaneity.* The answer to the question as to cause is: *Fabrications of imagination are concrete productions proper to the person, which go beyond experience.* Thus the distinction becomes clear: between all imagination on the one hand, all perception, remembrance and expectation which depend upon experience, on the other, that is, upon live contact of the person with the external world. This relation to "experience" must not be misunderstood. Perceptions and memorial images themselves are not bare, passively received impressions; this has been shown at length in earlier chapters; in all experience the stimuli are already moulded in a personal way. But even experience so shaped is exceeded in imagination. Exceeded—but not negated. On the contrary, items of experience are continually being utilized and cast into new configurations. This relationship of the "old" and the "new" in fantasy construction requires closer consideration.

Psychologies of a mechanistic turn formerly emphasized the view that it is only "elements" of experience that are brought into new combinations; the "original creation" of really new fantasy constructions was held impossible.

There is considerable evidence for this conception. The fancy "Pegasus" already mentioned is, it appears, simply the adding together of two universal elements of experience, "horse" and "wings"; and Homer could describe the famed monster "chimera" only as being a lion in front, a serpent behind, and a goat in the middle.

Imaginative poems consist of words that must be known from experience, and even new verbal constructions occurring in them are merely combinations and derivatives of words given in experience. Imaginative tales deal in the last analysis with plain, well known elements which are simply expanded or contracted, and which are most of all used in new connections. In precisely the same way, *analysis* of dreams, air castles, works of art, myths, may ultimately reach empirically known elements on every hand.

All this may be true enough, but it is of very slight consequence to the psychology of imagination. For the problem is not so much

that of *from what* fancy is produced, as that of *how* a completely different, unique, and figured whole is produced from raw material of any sort, however familiar it may be. Beethoven's sonatas are no less "new" and no less "independent" because only a small number of familiar musical tones was employed in them. And whatever is true in this connection of imaginative productions, is equally true of *imaginative ideation*. If in the latter all that occurred were the re-combining in a different way of conscious elements deriving from previous experience, there would still be countless possibilities of grouping, each one of which would correspond to a fantasy image. In reality, however, imagination has the *selective* and *creative* peculiarity of permitting ingress to only those "elements" that fit in and are required, attracted, and absorbed by the concrete totality of the pattern. And in reality, there are no "elements," that is, fixed stones in a mental mosaic; for on joining a fantasy they become something other than what they were in some previous structures. Any wings you choose, put anywhere you wish on a horse, will never result in a Pegasus; and no amount of items of experience brought together from antique chronicles about the magician Faust and then combined, will ever produce a Goethe's Faust as a unitary imaginary figure. Thus it is the sovereign arrangement of the raw material of experience that bears witness to the *productive* nature of all imagination. The individual is in far too intimate touch and union with the objective world to be able simply to shut out the experience he derives from it; it is enough that he is able to transcend and completely transform it, and that he can produce spontaneously those conscious fabrications which possess no less concreteness and configuration than items bound directly to experience.

c. *Manifestation and symbolism.* That which once appeared to be a lack in imagination now becomes a positive characteristic of it; the weakness of non-objectivity is transformed into the *strength of subjectivity*. The imaginative individual sets up in his consciousness a world of his own which, precisely because he shares it with no one else, informs inner experience as an extension of his individual personality and at the same time serves as its protective covering; for without it he would be delivered up to the harshness of the objective world. We now perceive that imagination is not a special power, which makes possible a capricious manipulation of any desired ideas, but a mode of inner experience growing out of the depths of personal striving and fed by these depths in both form and substance. *A man is what he imagines*, that is, he is at least brought under a definite perspective as a creature of desire and uneasiness, as the shaper of his intramental world in accordance with his needs, impulses, fears, and ideals.

This goal-directed imagination, whose guide is the depths of the person, invests its contents with a *symbolic* meaning. Each fancy thereby acquires a dual nature, becoming not simply a concrete image that intends a fictitious *object*, but also the projection of a personal *state of being* into the realm of pictorial ideation. An imaginative item intends something different from itself, but something that is not the same to the person who has it as it is to other people. One and the same fancy contrives to represent entirely different hidden processes; thus the terrifying demoniac figures which one meets with in myths, dreams, and the play of children, may well bespeak the desire for power, anxious dread, wanton horrors, sadistic or masochistic tendencies. On the other hand, the same personal impulse may be portrayed by different fancies; a strong need for esteem, which is suppressed while awake, comes to life in fantasies of one's gathering power, or in fairy-tale-like images of giants, sorcerers, and princes, or in spatial symbols of being on top, of flying, etc. And a peculiar *principle of disguise* is frequently operative; when that idea belonging most directly to the personal impulse is not realized in terms of fantasy, another idea that is in some way related to it is brought in for this purpose.

It is extremely difficult to obtain a glimpse of the autonomous workings of transference and displacement that will stand up under scientific criticism, while on the other hand it is obvious that the symbolical character of fantasy constructions offers inexhaustible opportunities for the wildest and most far-fetched *misinterpretations*,—opportunities that have been worn threadbare. For in view of the equivocality of the connections between personal tendencies and fancy, any interpretation may conceivably be placed upon any dream-, play-, or other kind of fantasy, and anything may conceivably be read into the fantasy. Deferring illustrations, we shall here simply formulate certain principles that should be observed in all such interpretation.

(1) The inclination to interpret imaginative contents symbolically must not lead one to overlook the *direct* connections mentioned above which may obtain between personal impulses and fanciful portrayals, and which may make a complicated derivation superfluous. Reinterpretation of a fantasy should be attempted only when no direct, meaningful relation of the fantasy to the person is discoverable, and when the personal structure for its part displays indications that suggest blocking or disguising. Completely off the track is the employment of an interpretative *schema* consisting of stereotyped symbolic meanings, according to which every long object in fancy receives the signification of "male sexual organ," or every destructive game of a child signifies the disguised killing of the hated father. Nothing

regarding symbolism can ever be taken from a separate imaginative idea as such; symbolism always assumes meaning solely through the connection with the total personal make-up of the imaginative individual.

Simply because the possibilities of interpretation are infinite, there is imminent danger of cramping these possibilities through some *pre-conceived theory*. The immense variety of fanciful forms is then classified under one sole heading or within a very few domains of alleged primordial urges. Thus one and the same fantasy image may appear in orthodox psychoanalytic interpretation as a sexual symbol, while Individual Psychology views it as a symptom of overcompensation for an inferiority, and Jung's Analytical Psychology traces its roots in "racial memory," i.e., in basic experiences of far distant ancestry. Clinging to their simplifications, these several branches of depth psychology are in danger of overlooking the fact that the person is a unity in *multiplicity*, and of becoming blind to the varieties of imaginative meanings and symbols.

The personal significance of fantasy constructions makes comprehensible the *degree and nature* of the accompanying *consciousness of reality*. We pointed out above that the intention in regard to reality may pass through all stages from complete belief in reality to complete insight into illusion. This feature does not depend upon the make-up of the material as such; the same fairy tale enters the experience of the adult storyteller as unreality, and that of the child who is listening as reality. Here the *spontaneity* of imagination is revealed in a new light: In making use of fantasy, the individual can impart to this personal world (or to various strata of it) *different orders of reality!* By means of fantasy he is able to insinuate into the unyielding and narrow reality of sense and immediate action a world that is equally "real" in terms of inner experience without being objectively consistent. He is able to merge the two worlds into one (especially in the primitive magical and mythological stage of development); he can also enjoy shifts and flights between them (as may be observed very frequently in children's play); finally, he may set the two worlds into sharp opposition and flee into the world of fancy in order to remove himself at least for the time being (this obtains especially in the enjoyment of art) from the robust, pragmatic world.

It will now be recognized just how inadequate the conception mentioned above is, as though there were but *one* binding, final reality for man, in contrast to which anything else that might be conceived could be nothing but lies and deception, non-reality and delusion. Personal reality has many strata and levels and even the significance of apparent reality lies in this stratified structure. It is often the transitional and suspended states between the plain world of reality and the world

of make-believe that make human life characteristically *human*. (In animal life worlds of reality and of make-believe are not differentiated, and the realm of tensions and interconnections is lacking.)

d. Creativity. The relation of fantasy to reality has thus far been presented in two forms. We first ran across the attribute of non-objectivity, by which fantasy is opposed to the object-world of *facts* and *values as given*. In the second place we unearthed the attribute of *apparent* objectivity; fantasy produces in the subject's inner experience a new reality which however remains intramental. We must now formulate a third phase; fantasy produces *new objectivity as its product*. It proves to be a psychophysically neutral process, for what is produced does not remain lodged in the subject's consciousness, but *alters reality* and becomes "creation."

The effect of imagination upon the building of personality is to be regarded as creative. The protective and wishful nature of imaginative activity operates so that the individual *transforms himself* and recasts his relation to the world. Don Quixote, imagining himself to be turned into the "last wandering knight," *acts* accordingly and thereby interferes with the objective course of events. Much the same thing obtains, of course, when the individual transforms his life by means of imagination in a normal rather than a delusive manner.

But the imaginative individual also has a direct need for the *external projection* of his intramental experience; in answer to it he tends to replace simple imagery with movement, expression, and production. Fantasy images themselves become wholly alive and concrete only by being cast into external modes of manifestation. At the same time there is a progressive *detaching* of the product of imagination from its maker, and its transfer into the objective patterns of play, art and myth-making.

Play and *art* are frequently mentioned and treated together; they are in fact closely related in that they bring new facts and events into the world by objectifying imaginative inner experience. But in the two cases the nature and significance of the objectification are of very different kinds. In play the product remains objective only so long as its producer pleases, and it has no significance beyond the person of the producer. The essence of art, however, consists in just the reverse. An expression of imagination becomes a work of art only when it is more than its creator's means of shaping and expressing himself; when it becomes transpersonal as a new objective bearer of meaning in the former world of objects. An intermediate stage is formed by those imaginative patterns which remain bound to the personality of the producer, like the dance and histrionics, but here too one may distinguish clearly between the bare playfulness of a child and the actions of an aesthetic dancer or an actress who is striving to con-

vey objective value. The difference becomes complete when the product of imagination is itself released from the sphere of activity of its creator and comes to constitute as a "work of art" an intrinsic and independent bit of the world.

e. *Bound imagination.* The activity of imagination is not exhausted with the production of salient fantasy images and products; on the contrary, there are countless imaginative aspects in other sorts of experience and behavior. These may be called "bound imaginative effects." Only through subsequent analysis of such experience and behavior are we able to establish the proportion of sensory and mnemonic components on the one hand and of imaginative aspects on the other. The personal experience, however, is in no degree a product of perception plus fancy, or of recollection plus fancy, or of thought or will plus fancy, but a *unitary* whole structure. This once more reveals plainly the inadequacy of a faculty conception which sets up "*the power of imagination*" as a separate faculty beside memory, intelligence, and will; it becomes evident, moreover, why psychology, with its increasing ability of analysis, began only recently to observe and to rank these bound components of imagination in the domains of sensation, mneme, and prospection.

II. IMAGINATION IN EVERY DAY LIFE

Bound imagination is far more extensive than imagination which comes to the fore independently.¹ For there is no domain of life or experience which it does not endow with its creations, even when the intention is directed upon objectivity. Moreover, there are no people, be they ever so unimaginative or anti-imaginative, who do not function imaginatively, at least in a bound, covert manner. It is a great mistake to suppose that imagination manifests itself actively only in dreams, play, myths, and artistic productions, while practical, every day reality, serious living, is not concerned with it. There are, to be sure, very marked differences in degree, but imagination is never completely lacking. In fact, the ubiquity of imagination is one of the essential features of human nature.²

These every day fancies are classified according to *temporal* criteria.

I. IMAGINATION FOR PRESENT AND PAST

a. *Present.* In no case do external relations appear to exert control more than when the world is presented to perception in the *present*.

¹ There is similarity to mnemonic processes; in their case bound memorial effects prove to be the broad substratum out of which independent memorial ideas grow.

² In one of his earliest writings Freud dealt from a purely psychoanalytical point of view with the investment of every day life with fantasy.

Yet even then room is always allowed for creativity, and extensive use is made of it. The illusions that were described in the chapter on sense perception (p. 166) depend not only upon sensory defects, but also upon the enriching and extending of the incomplete stimulus situation internally by the person while perceiving it. There are sensory stimuli whose sole or primary function is to operate as *fantasy stimuli*; instances are the varicolored spots on the wings of the stage, unfinished outline drawings, or hints in advertisements. The more meaningless or equivocal the sensory stimuli are in themselves, the stronger is the impulse to dress them up imaginatively and to complete them; everything conceivable is read, heard, and imagined when we look at the clouds, when we hear the confused buzz of conversation. A word snatched out of a conversation, a sentence not understood in a letter, these cannot be comprehended as they stand; we put them into imaginatively colored meaningful relationships, and when the word takes on a specific meaning for the hearer or reader, he does not suspect how greatly his own imagination has contributed to it.

Now the same sort of thing obtains, though to a lesser degree, in all reading and in all conversation. If I read a drama or a newspaper item about a railroad accident, I get not only the influence of the words and the general meanings bound up with them, but I also render the content *concrete* in a way that transcends the text; the people mentioned "look" some way or other, even when their appearance is not suggested by any words in the statement; physical surroundings, movements, and modes of expression become in a sense pictorial; perhaps I also somehow hear the voices of the persons involved, although I read their remarks silently. These imaginary trimmings ordinarily merge with the perceptions of the printed words and with the thoughts released by them into a totality which remains unnoticed by the reader—until he has to match his notions with the bare perception. He is then disconcerted because the hero in a stage presentation looks, talks, and acts altogether differently than he had supposed from reading. Any landscape, viewed for the first time, fails to tally with impressions obtained from descriptions and photographs. Surprises of this sort sometimes amount to disillusionment, thereby indicating how much a product of imagination may grow upon one. There are even cases in which fantasy images cannot be supplanted by revision through genuine perceptions; objective reality is rejected because of infatuation with phantom reality.

As long as it is a matter of purely receptive perceptual processes (as in reading plays, describing landscapes, etc.) flights of fancy are relatively harmless and are indeed necessary, in completing, for instance, the aesthetic enjoyment of reading. It is otherwise when they give rise to misleading consequences.

An exceedingly trite, but especially common illustration is *gossip*. On hearing this or that tale, one is not satisfied with the sound of the facts as established, but embellishes, enhances, and enlarges upon them out of the imagination, and *repeats them in this form*. Everybody who has a part in it thinks he stops with the version actually received, but in reality each one transforms it into something else, creating a new phantom objectivity which claims to be authentic objectivity. When we observe that inclination toward gossip is frequently coupled with a weak sense of responsibility and a lack of sympathy, we can only conclude anew that imagination is not something incidental, but anchored deeply in the person.

b. Past. The impregnation of *mnemic* processes by imagination is clearly revealed in the reproduction of past experience. In the section on the personalistics of recall¹ we emphasized the fact that recollections are not simply petrified traces of previous experience, but that in them a former sector of life may be seen in the perspective of present personal needs. Thus in a certain sense reproduction is always new production, and the touch of imagination thereby required becomes the more intense the more deeply the recalled event is embedded in the total life-meaning of the person. Personally indifferent recollections are consequently less vulnerable as to their objective, factual nature than are those which have intimate ties with ourselves. But the amount contributed by imagination is increased through social factors. Be it the aesthetic pleasure in recital, be it exaggeration and bragging, be it self-defence and modesty, be it delight in obscenity or the horrible—the most varied areas of personal impulse may be assigned to the task of rounding out imaginatively the depiction of a past experience.

Here too are pronounced "fantasy stimuli"; thus suggestion may operate in the examination of witnesses so that situations are reported on that would otherwise not have appeared at all. In social circles, when accounts of personal experience are related, imagination may be given free rein by the gathering dusk or through rivalry with other story-tellers.²

2. FANTASIES OF THE FUTURE

a. Anticipation. With the greatest intensity—because controlled the least—flights of fancy occur in those mental processes that deal with one's *future*.

To even the simplest and most conservative creatures, tomorrow and the next day are in some way uncertain; and future destiny, success and failure, vocational and domestic bent, and especially unusual

¹ See especially pp. 256 and 264.

² Goethe describes how as a child he was led by the credulity of his auditors to invent the tale of the "new Paris" and to present it as an adventure which he had experienced.

special events, examinations, journeys, choice and change of occupation, losses and additions to the family, etc., all these bear for the individual the stamp of indefiniteness and shapelessness, that occasions anticipation by fantasy.

There are of course people who limit their conscious interest to those fields which admit relative certainty of prediction. They keep their fears and hopes within the bounds of reasonable expectation; those episodes of life which they can influence are subjects for forethought and planning and are moved by volition; there is no conscious tendency to anticipate them by concrete fantasy images. However the difference is wholly one of degree; a life completely free of imagination of the future is not possible for man. For the indefiniteness and equivocality of the future not only presents the *possibility* of concretizing one's vague ideas of it, but *forces* one to do so because the *uneasiness* that always attends vagueness is often unbearable.

Imaginary pictures of the future never run the risk of immediate disavowal, which in the case of fantasy of present and past always amounts to strong inhibition. Thus as far as intensity and freedom of content are concerned, fantasies of the *future* in even practical people are far more vivid and mobile than are the other forms. One builds air castles about some day coming into an unexpected fortune. The young girl depicts to herself the man she would some day like to marry; and a woman pregnant for the first time devotes her imagination to the pleasures of coming motherhood. One who is about to make a long journey lives far in advance in the impressions, adventures, and events that his stay in foreign countries are to bring him. Before examinations, portentous interviews, or a first appearance in public, imaginary dramatizations are often conducted, in which the words and actions of interlocutor or public are pre-experienced.

b. *Wishes*. That *wishes*, uttered and unuttered, blend into fancy, is very plain. The wish is lured by a *fulfillment* which has not been attained in reality and which may not be obtainable at all. The unknown, hungry artist deludes himself with imaginary fame, the invalid with pictures of all that he can do and enjoy after he is cured; the weakling with imaginary episodes involving power. As these examples show, wish-fulfilling fancies are able to perform the function of *compensation* in the region of personal resource and value, and to do this in a dual sense. The condition of personal deficit is replaced by an imagined surplus; imaginative *delight* covers over the *unpleasantness* of reality. Active endeavors to attain an objective are replaced by the fantasy of the objective already attained; thus imagined *ease* covers over the *difficulty* in willing and thinking. We shall later discuss in greater detail the significance of wish fantasies (in dreams, play, and myths) for depth psychology.

c. *Fear.* *Fear-fulfilling fancies* appear to be more enigmatical than wish-fulfilling fancies. With respect to possible failures, misfortunes and sorrows, prospective imagination is likewise active. What impels the individual to envisage evil that *might*, and also might not, befall him, as already actual? Two different groups of motives appear to be at work here.

For one thing, the indefinite and the unfathomable can become especially unendurable when it is of a menacing nature: the individual saves himself *in advance* from the uneasiness of the intangible menace through concrete albeit only imaginary horror.¹ By virtue of its concreteness it in some way becomes mastered and the person's property; its foreign and disconcerting aspect is taken away. We are told not infrequently in such cases that when the misfortune actually arrived, it "was not as bad as had been imagined."

But the fear fantasy may also signify an attempt to *evade* reality. A man does not feel himself equal to the summons to resolve an action that comes to him from without or within; he proceeds to figure to himself the possible negative outcome of his action as probable or even inevitable, in all its particulars, in order to justify his inactivity to himself and to others. "There's no point in it," "I can't stand the gaff"; "I'd get a rebuff"; these considerations are not only thought out and weighed pro and contra, but they become concretely imagined and are endowed with future reality. Thus the terrifying fancies are twisted into causes for not *desiring* (to do a thing), while in reality they are the effects of not *being able* to desire it.

The inhibitory effect of fancied fears can also possess highly positive, that is, deterrent, significance, in which case they act as *preventatives* in dangerous situations.

Examples: (1) The thought "Careless handling of benzine can result in fire and death," however clearly entertained, may not, in its abstractness, possess any strong motivational force. But if one also combines with it the concrete imaginary *picture* of oneself bursting into flames while handling benzine, in which frightful details predominate, one will be moved to be careful.

(2) An individual wishes to travel in a country of different climate and lower civilization. He has secured precise information and *knows* theoretically that there are torrid temperatures that he has never had to endure before, that he will have to relinquish civilized ways of living always taken for granted. He knows all this, and is convinced on the basis of theory that his body and will are up to these difficulties. But this "knowledge" may amount merely to deception because he is unable to form any concrete *picture* of how his life will actually proceed, of what countless necessities he will have to give up and of what countless new disagreeable

¹ As is well known, this "premature flight" also occurs in real actions, as in battles, conflagrations, marine disasters.

and unconformable situations he must experience. In short, he is too poor in imagination, despite his intelligence, to be able to anticipate the circumstances accurately.

As we know, this deterrent principle plays a large part in the treatment of crime, but here thorough psychological research is still lacking. Obviously threats of punishment may be expected to have a deterrent effect when the concrete and self-referred image of possible punitive consequences enters into the deliberations of planning a crime. Of course it can never be determined how many crimes fail to occur because of this interference by imagination. On the other hand, it would be possible to investigate the question as to what lack of imagination has to do with the crimes that do occur. This factor cannot be inconsiderable.

Imagination, to be sure, may promote crime. For since imagined wishes and fears cannot be clearly separated, the anticipatory image of a criminal act (e.g., blackmail, sex delinquency) may involve the vivid notion of fulfilled impulses and wishes as well as that of the possible consequences. Therefore in cases in which impulsive excitation and action are closely connected, the imagined fears do not always suffice to lead to inhibition.

d. Objective anticipation. The fantasies born of wishes or fears which we have previously discussed are wholly anchored in the subjective sphere. Yet it would be very wrong to suppose that prospective imagination occurred only in falsifying or inhibiting an objective attitude toward the future. Indeed, successful mastery of the future cannot be carried out altogether by means of thought and volition; these functions are too abstract and too deliberate. They must be supplemented by acts of concrete and intuitive—i.e., imaginary—anticipations. Supplemented—but never replaced. As long as imagination remains subordinated to and controlled by critical thinking it can develop a very positive significance. An inventive merchant or engineer need not be a visionary. He may have a kind of intuitive delicacy of feeling for what is plausible, permitting ingress only to promising imagery; thus he may activate anticipations which, though seemingly irrational at first, are subsequently justified by experience or rational substantiation.

Anticipatory imagination in this guise is requisite for any far-reaching project, be it politics or strategy, that of the educator or financier, of the artist or the scientist. To be sure the danger is always imminent that intuitive imagination will break the bonds of rational control and wash away deliberation and self-criticism. Here we touch upon the tragedy of many great personalities in history who, just because they had to plan and carry out great deeds on a grand

scale, were to a considerable extent forced to use anticipatory imagination (Napoleon).

3. PERMANENT FANTASIES

Permanent fantasies do not refer to a definite point of time, but are experienced by the individual as an integrating factor of his existence. They determine his present, but also organize future and past segments of life in so far as these are connected with the present; they give color to recollections as well as to wishes and fears. Their objective duration may be very varied; an insane person who suffers from delusions of grandeur lives amid his emperor- or God-fantasies until the end of his life; an adolescent who constructs a world of fancy during a crisis of puberty, may progress beyond the critical period and thereby beyond his system of fantasy within a few months. Nevertheless, it is still more or less a *system*. In this respect, lasting fantasy resembles play and art, in which the imagined world likewise undergoes a certain structuration; but it differs from them in its relation to reality. For the individual who starts out with such fantasies automatically alters the reality in which he is living; practical reality and the world of fancy merge indiscriminately with each other, and conflicts occur with the stubborn facts of the outside world and with the ordinances of society.

These lasting fantasies occur chiefly in cases where consciousness of objective reality is not fully developed, as in children and adolescents, or where it is abnormally restrained, as in many neurotics and insane people. Such an individual becomes "autistic," that is, the world exists for him only in so far as it concerns his person; and everything in the world is reinterpreted, reviewed and twisted into personal wish- and fear-fulfillments. Or his personality becomes "split"; besides normal life in the real world, which goes on unchanged, a second life in the world of make-believe is not only imagined but realized, sometimes to the accompaniment of twilight states in which the one life knows nothing of the other.

Here the line between normality and mental illness is difficult to draw. For example, in people who are not adults it would be altogether unjustifiable to interpret the appearance of such lasting fantasies as abnormal. In at least two periods, the first contrary age at about the fourth year, and puberty, the breaking up of the previously accepted self-world relation is a wholly normal developmental phenomenon; and the discord that arises between one's own self-assertion on the one hand, and restraint by a world of prohibitions and commandments and one's own unproficiency on the other, may often be resolved only through a flight into the world of desire portrayed by lasting fantasy.

The unexpected extension of such lasting fantasies in children in their fourth year was demonstrated in an investigation by C. and W. Stern. For the most part it was a matter of creating the phantasmas of companions, of brothers and sisters who were supposed to make the child forget his actual solitude, of invisible spirits who were used as playmates and helpers and as scapegoats for his own trivial infractions. All children observed were and remain mentally healthy, and gave up their systems of fantasies by themselves when the critical period was past. The psychological literature of adolescence contains material on similar phenomena in the crises of puberty.

These lasting fantasies occur even in adults without necessarily being symptoms of disease, but in this case only when they remain *intramental*. Rational thought and organized volition are then sufficiently strong to keep the reality-reference of life in order; only in daydreams, in giving way to one's self, does one play at living in the unreal world of wishes. (This brings us very close to dreaming, art, and play.)

III. TESTS OF IMAGINATION

Imagination, being a spontaneous as well as an unbounded activity, is not easily accessible to exact methods of investigation. For the most part, psychologists have not interfered with the free course of imaginative processes; they have contented themselves with observing these processes or gathering and analyzing their products (e.g., drawings, poems etc.) But there is also a need for experimental research and for examining individual peculiarities of imagination, and some tests have been devised. In contrast to other test methods, imagination tests do not demand a single unambiguous solution following a prescribed line of march; nor can the outcome be rated "solved" or "failed." Rather does the task offered from the outside serve merely as a fantasy-stimulus inducing the imagination to realize its internal tendencies. The results are to be interpreted and evaluated qualitatively rather than scored quantitatively.

For testing verbal imagination the "Masselon" test (see p. 314) may be used with modifications. Three words are given; the subject must not only combine them into a meaningful sentence, but describe a situation or invent a story around them; this reveals easiness, concreteness, organization and inventiveness in the subject's imaginative activity. Another method is to tell the subject the first part of a story and have him continue and complete it.

Pictures offer other possibilities. Again the instruction may call for telling a story which refers to a single picture or a series of pictures. But the best material is a picture that has no intrinsic meaning at

all, but is a hodge-podge of spots, lines, and shadings. As previously mentioned, the more vague the impression, the greater the promptings of imagination to transform it into something meaningful. Blurred ink-blots have been used, made by folding a paper on which ink was spilt, thus producing grotesque symmetrical forms. This method has been made an elaborate psychodiagnostic tool by the Swiss psychiatrist H. Rorschach. But since the symmetry and the sharp outlines of the Rorschach figures proved to handicap free development of fantasy, another kind of picture was invented under my direction by Struve in Hamburg; these "cloud pictures" show no regularity whatever; instead of sharp contours there are only spots of different shades of black, gray, and white, more or less blurring into one another. Here imagination is more at liberty to indulge its sovereignty; the test proves very promising for theory as well as for psychodiagnostics. Fig. 13 shows¹ one of the cloud pictures. The subjects have not only to tell what they see but also to outline the objects seen in the pictures themselves and to write the designations on the margin; Fig. 14 gives a sample performance by a ten-year-old negro boy as later transferred to white paper; it is an interpretation of Fig. 13. It is amazing to discover how some subjects, especially children, do not tire of picking out detail after detail or interpreting the picture as a total scene (a cave with people and animals, a battlefield, mountain scenery, etc.), often with a different scene in each position of the picture; although other subjects manifest an almost complete lack of inventive imagination.

In connection with the drawing reproduced here (Fig. 14), the child's comments were in part as follows:

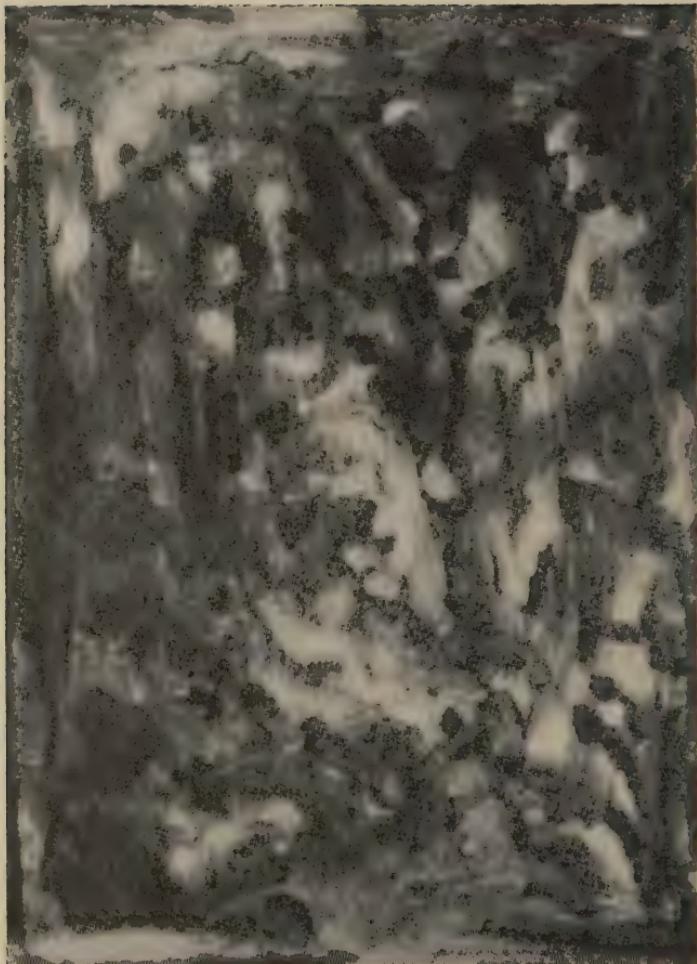
"It looks like an indoor swimming pool. There are people around it One person is diving There's a pillar on one side, holding it up A face and a pointed hat are carved on it Back here is more carving,—a dog's head A person is swimming over here."

This negro boy is ten years old, and in the seventh grade. His I.Q. is about 130.

¹ For a description of the method and experimental results see the article by W. Stern and Jean MacDonald on cloud pictures.

After Struve

FIG. 13. A SAMPLE CLOUD PICTURE



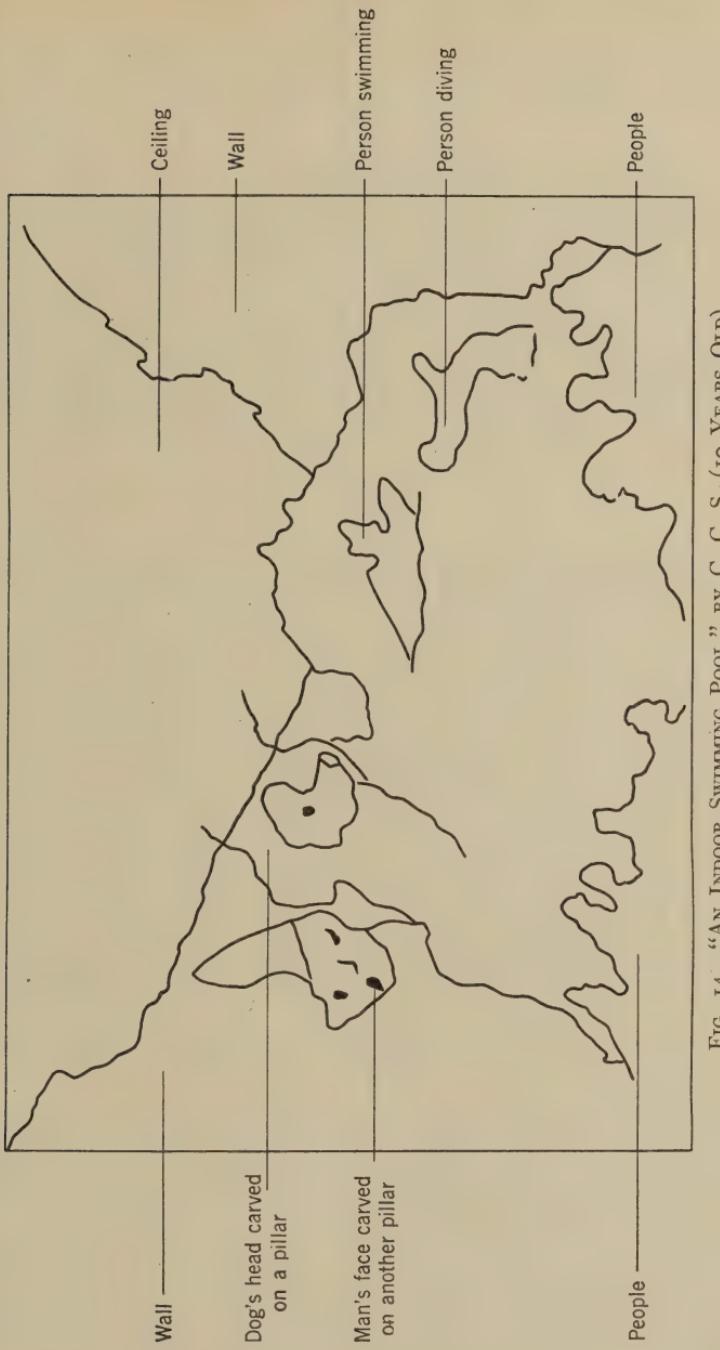


FIG. 14. "AN INDOOR SWIMMING POOL," BY C. C. S. (10 YEARS OLD)

CHAPTER XIX

SPECIAL FUNCTIONS OF IMAGINATION (DREAMING, PLAYING, CREATING)

There are three particular regions of human life in which imagination plays a dominant part. These areas also form a scale of progressive objectification. In *dreams* imagination remains purely intramental, in *play* it becomes a temporary end-in-itself, and in *artistic* creativity it is permanently objectified.

I. DREAMING

All experience in dreams is imaginative, since it takes the form of imagery whose content goes beyond all realistic impression, even though the latter may contribute raw material; this imagery constitutes a naïve realism, since criticism, control, and refutation by practical consequences are lacking; on waking, one has a sense of two worlds, that is, the feeling of the disparateness of the make-believe world from which one emerges and the world of being into which one wakes. Contributing to this feeling of two worlds are the rapid disappearance of the dream from recollection and the awareness that the lingering shreds of dream, as far as recalled, present but a pale and distorted view of what was actually experienced in the dream.

This feeling naturally includes a strong impulse to break down the cleavage, and everything that humanity has essayed in the way of explanation and interpretation of dreams from ancient times down to the present, from Joseph in the Bible down to Freud the modern, has as its common objective the correlation by some means or other of the images and events of the dream world with the objects and events of the waking world.

Attempts have been made to formulate the problem of dreaming sometimes in terms of the object, and sometimes in terms of the subject. In the first case it is supposed that objective things and processes, spirits and daemons, the souls of the living and dead, make incursions into the sleeper's world; in the second, dreaming is an occurrence that is meaningfully embedded in the total life of the person, to be explained in one way or another by his waking life. The modern psychological theory of dreaming must take both points of view into consideration.

I. DREAM STIMULI

The conditioning of dreams by *objectivity* is both sensory and mnemic; its operation includes present sensory stimuli and previous experience.

a. *Sensory stimuli.* The exposure of man to *sensory stimuli*, while reduced during sleep, cannot be eliminated. The number and variety of stimuli affecting the body is certainly far smaller than in the waking state; the position of repose, closing the eyelids, darkness, the quiet of night, mean the exclusion of countless stimuli, tactal, kinaesthetic, visual, and auditory. Yet the body moves during sleep, thereby producing new tactal and kinaesthetic stimuli; changes in covering modify temperature; bright light stimuli penetrate even closed eyes; and the ear has no special physiological protection from noises and voices during sleep.

It is only because sleep also involves a drastic reduction of sensory *susceptivity* that it is possible for these ever-present stimuli to remain ineffective. The less the penetrating power of external stimuli, the "deeper" the sleep. The human need for restoration which is served by sleep ordinarily creates the necessary inhibitory mechanisms against disturbances, and the chief mechanism is the marked raising of sensory thresholds.

The stimuli that cross the threshold can have two effects: *waking* the sleeper¹ when they are very impressive, and influencing dreams when they are less so. Here "impressiveness" does not refer solely to mere sensory intensity. This is revealed by the "waking stimuli." Soldiers in the trenches slept through the heaviest artillery fire when they had become accustomed to it; but at the word of command, acoustically much lighter, they awakened at once. A young mother who slept through the loudest street noises, used to be awakened by the softest crying of her child. The ringing of the alarm clock awakens people who are not awakened by the much louder ringing of railroad or other bells, etc.

The same sort of thing is evidently true of *dream stimuli*, except that it is more difficult to demonstrate. The dream-like elaboration of a stimulus signifies first a kind of self-defence of the person against the shock of being awakened. The excitation set off by the stimulus makes sleep less deep but does not interrupt it. If the stimulus is elaborated into a dream, its effectiveness ebbs away and sleep may be continued. But the course of the process may be such that waking is not prevented but only delayed; the dream-response to the stimulus then becomes a kind of transitional and preparatory phenomenon.

¹ Kraepelin developed an experimental method of measuring the deepness of sleep by determining what stimulus intensity (e.g., of a sound) is necessary to interrupt sleep. But the above examples show that a purely sensory measure is insufficient.

Everybody knows cases in his own experience in which the ringing of the alarm clock, or knocking on the bedroom door, were first experienced and elaborated in a dreamlike way and then led to gradual awakening. This helps to explain why one often has the feeling of remembering only the dream that one had immediately before waking; it is precisely that dream which was part of the process of waking up.

In the last mentioned cases the dream stimulus often operates as an adequate stimulus (producing dream perceptions that correspond to the waking perceptions of the same stimulus); one *dreams* that the alarm is ringing, that someone is knocking, etc. But more frequently there is a peculiar distortion of perceptions which gives the rule for dream stimuli that do not lead to waking.

Perhaps a sleeper is touched lightly on the neck by a rod falling across it; he dreams, without waking, of his approaching execution by the guillotine. The covers fall off and the sudden cold becomes a dream stimulus; the sleeper dreams that he is suddenly transported to the polar regions. The ringing of the alarm becomes the furious clanging of a fire engine, the slamming of a door, a cannon shot, etc. Internal stimuli, e.g., from the digestive tract or the circulatory apparatus, may also be transformed in a dream into other kinds of bodily phenomena, such as flying, falling, and nightmares.

b. *Mnemic stimuli.* Like all fantasy constructions, dreams also point to the raw material of experience originating in waking hours in the past. Not only separate dream fragments are mnemically determined; there is also the return of entire, coherent patterns of experience; dreams of school and examinations, travel dreams, events of the previous day, and scenes from remote childhood, recur in dreams.

The *selectivity* of this mnemonic dream-work is very different from that of waking recollection. There is quite often perplexity over the reason for dreaming of some inconsequential detail, of some insignificant, long forgotten person or event. Objective grounds for this can very seldom be demonstrated; (an example would be sleeping in a certain kind of room while on a trip and dreaming of some similar previous stay). Thus everything points to selection by the *subject* in so far as it is possible to explain it at all. Two kinds of mnemonic dream activities must here be distinguished, similar to the distinction made for waking recollections; they are the modes of *continuity* and *cleavage*.¹

The phenomena of continuity are relatively easy to describe. Just as dreaming is a preparation for waking, on first going to sleep it is also the *after-effect of the waking state*. The course of activity shades continuously from states disciplined by thought and will into sluggish daydreams, drowsy visions, and night dreams, running off into

¹ See pp. 253 ff.

dreamless sleep. It is evident that preceding waking states are actually "echoed" in such transitional states; whatever occupied us actively during the evening, reflects in dreams that period which is known in the psychology of memory as "primary remembrance" and "time fringe" (pp. 200 ff.).

But this effect of continuation is not at all ubiquitous; dreaming often *shuns* even the most impressive events of the preceding day; thus it is well known that after a death, those who are left almost never dream at once of the dead person. Instead of this, only unexpected recollections long since effaced are revived in dreaming. This brings up the rôle of phenomena of cleavage; the dream appears to be not the means of prolonging, but the *opponent* of waking life.

The negative side of this phenomenon, that is, the suspension of waking interests, may be regarded as a kind of personal sidetrack opened for restorative purposes. Besides relieving bodily tension, sleep is evidently supposed to remove the danger of overstimulation and of excessive demands of mental processes. But this restorative tendency is realized not only in the emptiness of sleep, but also in shifting over from the more serious, active, and responsible activities to lighter, freer, less serious, in short, *more imaginative* modes of behavior. In waking life this leads to play after the cares of the day, in sleep, to dream-play. The unrestrained and uninhibited course of dreams are thus of great importance in regeneration.

2. DREAM FANTASIES

What principles are followed by this selectivity exercised by dream activity among the experiences of waking life? And what does the dreamer do with the ideas to convert them finally into irrational fantasies alien to experience? These problems are so difficult that we can approach them only by successive steps.

a. *Dimensional metamorphoses.* Let us commence with the fact that *personal dimensions* are remarkably altered during dreams. Only the "present" is ever really dreamed, spatially and temporally. In dreams everything is "here" and "now"; into this present the distant and the near, the past and the future, are indiscriminately drawn (for that which is impending is dreamed as immediately threatening, and hence as belonging to the prolonged mental present). Objective spatio-temporal order is thereby lost; no fantastic fairy tale can devise more grotesque spiriting from one place to another, nor wilder mixtures of events from different times, than is possible in dreaming. On this account very remote experiences, in so far as they can be reproduced at all, are of no less significance to the dreamer than the events of yesterday; when an adult dreams of school-day anxieties, he is

anxious *now*, although the dream need not make the dreamer see himself still as a school child.

Here we may bring up the question as to whether the seeming remnants of orderly objective arrangement do not for the most part arise during *subsequent* remembering and stating of the dream. Knowledge of dreams and retrospective reports of their contents presuppose the waking state, a completely different mental situation from that in which the dream occurred. Above all are waking remembrance and depiction necessarily conditioned by the *demands of logic and expression*. What is wholly twisted and wild cannot be subsequently reconstructed as such, let alone stated in language clear to others. The very fact that the report of a dream must take place in a temporal sequence, can lead to the illusion that the items recounted must have followed one another in this same succession—for which there is no evidence whatever. There are for that matter indirect indications that greatly strengthen doubt of this.

We mentioned (p. 344) a dream of being executed as an example of stimulated dreams. In the report it was stated that waking occurred *almost immediately* after this disturbing of sleep. But the account of the dream discoursed at length of enemies, pursuit, capture, death sentence, the dream being interrupted by waking the instant before the execution. Thus a confusion of images connected in some way with decapitation must have been set off by the stimulus simultaneously or in extremely abbreviated form; it was the recollection and recital that introduced temporal order.

I once had the following dream of my own. (At that time my brief noon nap was usually terminated by the arrival of the letter carrier; the mail was usually brought into the room in which I lay on a sofa.) Once the ringing of the letter carrier affected my sleep without waking me, instead acting as a dream stimulus; according to my recollection of the dream I had dreamed very logically: I heard the letter carrier ring and the housemaid enter with the mail; I took a letter, opened and read it—it was a four page letter of great interest to me—and when I had finished reading, I was awakened by the actual entrance of the maid, who had come to my room without delay on receiving the letters. The objective span of time between the ringing of the postman and the entrance of the maid was far too short to have given me time enough to read the long letter when awake.

b. Distorted ego experience. The derangement of the personal dimensions in dreams is merely an indication of a deeper phenomenon, *the derangement of self experience*. The shrinking together of the self while dreaming into a bare "self of the present" signifies far more than a mere matter of space and time; that *higher self-organization of the person*, by which he fits his continuity of life into the arrangement

of the objective world, becomes dissipated. Along with the lack of remembrance of one's own past in dreams goes the lack of conscious responsibility for it, and with that of prevision into an extended future, that of conscious acknowledgment of tasks and duties; likewise with the lack of spatial order goes the disorganized relation of the self to the transpersonal world. What sleep eliminates is not consciousness in general but the concentration of attention, thought, and will that purposively directs mental life. The upper stratum of personality, developmentally later, is befogged and rendered incapable of functioning during dreams; all that remains is the vital and intuitive lower stratum, which is now given free rein.

This fact signifies first of all a reduction of the energy expenditure of the waking state. All activity, intellectual and bodily alike, consumes energy which needs to be regenerated; thought and will must rest against coming demands.

But the *positive* import of the phenomenon is of far greater moment. During full waking-consciousness the areas of imagination and impulsive striving must be subordinated to the organizing functions of thought and will; in this process they are in many respects repressed, thinned out, and altered. But this inhibiting of personal spheres of wish, need, and fantasy is never complete and never kills them off; the instant the activity of thought and will becomes quiescent the pent-up forces burst forth in precipitous and disorderly fashion.

If this were to take place in actual waking life the normal relationship of the person to the objective world would thereby be annihilated, with attendant disorganization of the structure of meaning of the person himself. This is the case in diseases of the mind, in which thought and will have lost their power over impulse and fancy.

But in the life of normal people a marvel occurs; instincts, wishes, and the imaginative ideas become emancipated in dreams from thought and volition, giving vent to their repressed forces *without thereby jeopardizing the normal ego-world relation*. Dreams become theatres of action for mental trends that are otherwise fettered, but this process remains wholly *intramental*, merely constituting a passing world of appearance without directly entrenching upon the objective and social world of which the individual is a part.

These processes are nevertheless all the more important for the person in whom this intramental activity is unleashed. For in reality it is not a matter of various independent faculties which exist in isolation or conflict within the individual, but of the individual himself in whose total structure will and impulse, thought and fantasy are joined into a more or less strained unity. *It is for this reason that the imaginative fantasy phenomena occurring in dreams have personal significance;* they are no capricious hodge-podge of ideational elements nor purely

mechanical chains of associations without meaning, but a portion of personal life, and as such, in meaningful combination with it.

c. *Interpretation of dreams.* Freud's dismissal of the principle of meaninglessness from the psychology of dreaming should be acknowledged as his lasting service. In trying to prove that dreams have meaning, he also concluded that they must be capable of being *interpreted*, and for the first time the interpretation of dreams, which up to then had been an object of superstition and the occult (which it still is in large measure), became at last a scientific problem.

The interpretation of dreams must of course remain superstition so long as it ventures to prophecy *objective* and especially *future* events from dreams. On the contrary, the sole object of interpretations of dreams can be but the *dreamer himself*, in terms of those strata of his personality which, trammelled and blocked in the waking state, influence the higher domains of activity and the total personal structure. Freud and countless others after him have practiced subjectifying interpretation of dreams in this manner, and our entire study of dreams thus far goes to justify the principle. To be sure, this signifies nothing concerning the kind and content of the interpretation, and on this score a personalistic consideration must seek to supersede the narrowness of psychoanalytical interpretation of dreams.

Freud facilitates his undertaking at the outset by making the report of a dream *equivalent to the dream*. We indicated above that, being an activity of the individual when awake, the report of a recalled dream must be in part a product of the waking process of logical arranging, and that it consequently sounds far more rational than the dream itself in all likelihood was. The more rational the material of interpretation, the easier the interpretation. Unfortunately, we do not know in that case to what extent the factual dream and to what extent the rationalization of the dream by the person reporting becomes the object of the psychological analysis. Since a dream is a kind of mental safety-valve for otherwise inhibited impulses, psychoanalysis holds that the details of the dream *content* must be correlated with the *content* of the impulses. The fantasies of the dream would then become subject to interpretation either as direct reproductions or as symbolic disguises of the intrapersonal tendencies and strivings.

This contention is extremely precarious because it legitimizes boundless interpretation, purporting to reveal the hidden meaning of *any manifest item of the dream*. In reality, however, a dream is an *Ungestalt* rather than an aggregate of isolable items, dreaming being the expression of the total state of the sleeper at the time; and dream and dreaming may surely have personal significance *as a whole* without an item of interpretation being correlated with every individual element in it. Psychoanalysis overlooks, for example, the fact that the

chance to play with images accords as such with a deeply rooted human need, and that the opportunity to give oneself over to this unrestricted play without being forever reprimanded by harsh reality invests the dream with a personal reference quite apart from its special content. It must also be remembered that there are areas of feeling involved in the vital make-up of the individual which are not differentiated as to content. There are states of depression, anxiety, tenseness, unrest, etc., that may be determined originally not by concrete ideas but by purely somatic changes. If such a mental complexion is precipitated in a dream in terms of fantasy (e.g., anxiety or uneasiness in an anxiety dream), one is by no means entitled to seek the "original anxiety experience" in some symbolically disguised item of the dream.

It goes without saying that some interpretations in terms of content are justified. But one may avoid particularized and dogmatic interpretations, and restrict oneself to interpretations that are plausible not only to the adherents of a particular school but to all psychologists.

The simplest instances are those in which the manifest content of the dream coincides with the motivating idea, and only the "modality," so to speak, is altered. Whatever is wished or dreaded in waking life is brought into the present in a dream and thereby to fulfillment. A hoped-for trip is already taken in a dream; an impending examination is straightway passed or failed in a dream; a person at a distance for whom one longs, a dead person whom one loved—they visit us in dreams, and we enjoy their fellowship as a matter of course. Dreams illuminate still deeper strata of the personality, when it is a matter of wishes and fears of which one can give no conscious accounting in waking life, whether it be because such strivings cannot exist in the face of *thought* (utopian wishes, ungrounded anxieties), or because prohibitions and inhibitions issue from the sphere of *volition* to forbid their becoming conscious (sinful, criminal, socially proscribed wishes). Thus one must agree with depth psychology that the individual may reveal in his dreams those subterranean processes of his mind which in waking life he keeps back not only from others but also from himself.

But the psychoanalytical opinion, which is essential to an entire program of interpretation, that it is practically always a question of sexual impulses, is one-sided. Truly enough, the wide range of the erotic and sexual is especially disposed to utilize the dream-outlet of wish fulfillment, because in waking life it is tabooed as is no other area, and because the strength of impulse may moreover be so great in this direction that the inhibitions of waking life are forced to give way at some point. Nevertheless a major rôle, but not sole dominance, is to be ascribed to the sexual sphere in dreams. In dreams too the individual is the *unitas multiplex* of his impulses and strivings.

In the domain of impulse, therefore, other areas besides sex can carry weight; thus for example, hunger has a part in dreams of gluttonous meals and the like. And apart from this there exists *above* vital impulse a variety of repressed interests, wishes, and endeavors that likewise occasion fulfillment in dreams. When anybody dreams of a certain person as dying or dead, must this always be due to sex jealousy or to the unconscious death wish of the oedipus complex? Cannot some rivalry of another sort, e.g., a professional one, or an otherwise motivated hidden hatred have a part in it? Strivings for esteem and fame, enthusiasm for political, artistic, religious ideals, and also social feelings that have nothing in the least to do with sex; these commonly escape into dreams when they cannot be completely substantiated and gratified in waking life. Thus the minor employee who is rebuffed on every hand dreams of himself as the head of a large firm; the warrior who must not be soft in his real dealings dreams of tender, compassionate conduct toward others and exhibits in his dream his abhorrence of having to kill. The artist who is struggling hard over his unfinished production sees in his dream the completed masterpiece. We have neither grounds nor the right to assert that such dreams must be revised in interpretation until their "true" (meaning sexual) wish plainly appears. Man is mentally far more versatile than such a one-sided theory is willing to acknowledge.

II. PLAY

Since play is preëminently a childhood pursuit, the theory of play has been treated chiefly by modern child psychologists; and many details may be found in their many-sided investigations.¹ There nevertheless remain some phenomena and problems that belong to the field of *general psychology*, which must consequently be discussed here. Indeed, it is even necessary to put child psychology into the background lest our view and theory become one-sided. The fact that not only children play, but adults too, often passionately (card games, chess, football, billiards, etc.), and that among these there is a "player" type of character, requires a more comprehensive treatment of the problem of play.

I. PLAY IN DIFFERENT STAGES OF LIFE

If we compare the play of children and adults a common principle is revealed; *make-believe* is produced in the midst of the world of reality. Like the playing of soldiers by youngsters, the billiard play-

¹ The actual founder of the psychology of play was K. Groos who many years ago wrote foundational monographs. Newer monographs are by Hetzer, Buytendyk, Lehman and Witty, and others. Investigations of the theory and the phenomena of play may be found incorporated in the books on child psychology by Groos, Claparède, W. Stern, and others.

ing of grownups is a sham battle between people who in reality bear no enmity toward each other; an actor's rôle is as fictitious as the rôle of mother assumed by a girl playing with dolls. In both instances all the meaning of the play lies in the *present*; unlike work or artistic creation, play does not incline toward some systematic objective; it has no sequels, and it is not serious, however seriously the player may take it during its course.¹

The differences between the play of young and old become clear when certain *lines of development* are disclosed. In early childhood, play is definitely central to the child's behavior (wherefore this period is also called the "playing age"). Here there is no sharp separation of the world of play and the world of real earnest; all environmental objects and all the child's actions, including the realistic ones like eating, dressing, etc., become entangled in play and charged with playfulness; even when things are frankly "taken seriously" there is no clear-cut distinction between make-believe and reality. In terms of inner experience there is scarcely any difference between a girl's helping her mother dress the baby by handing her the garments, and dressing her own doll. The school age brings about fundamental changes, inasmuch as the child experiences *side by side* the two spheres of work and play, which are now clearly separate; at this point serious activity begins to develop with increasing strength, along with restraint of playfulness. In adolescence the intermediate and mixed forms appear; intermediate forms are athletics, which, by the principle of constant increase of prowess, no longer yields gratification purely in the present but imposes future goals, collecting, and other hobbies directed upon the promotion of lasting concerns. A mixed form is "serious play" (*Ernstspiel*), a behavior which, while subjectively of serious import, retains objectively the freedom and lack of consequence of play.²

In adulthood play, sports, and hobbies become more and more definitely a mere adjunct to life, supplementing and completing it while affording a contrast to the severity of occupational routine and to the momentous responsibilities of domestic and public concerns.

The changing place of *imagination* also correlates with development. In early childhood imagination is very free and spontaneous, wanton, unorganized and bubbling. In play everything is grist for the mill; both player and objects played with can assume any sort of "part" without rules or restrictions; the child is sole ruler in his world of play.³

¹ If the purpose of the play aims at sequels that extend beyond the present, the true play quality disappears. This holds e.g., for games of chance by which the player would enrich himself.

² Cf. p. 360.

³ See also p. 356.

When socialized play becomes more prominent, the individual's imagination must be curbed in certain respects; the game, its setting, and its rules impose limitations and directions which, without eliminating imagination, discipline and organize it. In athletics the principle of organization attains great strictness; each action is prescribed and established, and there is little room for free imagination, which receives new impulsion in the "serious play" of adolescence where instincts, desires, and anxieties are elaborated in an highly imaginative manner.

The play of adults, however, is well-nigh devoid of imagination; forms of solitary amusement like collecting have their course laid out for them in greater or less strictness by the objective and the material. Social games (cards, table games, sporting games) are hedged by such a mass of fixed rules that very limited freedom of action remains to creative imagination.

It is not, then, simply a question of where stress is laid, but of fundamental qualitative changes; the play of adults stands for something different from the play of children. Nevertheless, all the points of difference have the same common substratum—human capacity for play of any sort; and the theory of play must first of all elucidate this basic fact, in order to explain the specific functioning of play in the various phases of development and the various life-situations.

2. THEORIES OF PLAY

a. The basic personalistic conception. There are many theories of play; perhaps the apparent purposelessness of play activity has encouraged the search for its true purpose. What is irrational must be made rational. Hence theories have proved inadequate through emphasizing the utility, the biological import of play. Such inquiries, while entirely justified, are incomplete in themselves. From the personalistic point of view we must commence with the principle that play is not merely of instrumental significance for man, but also, and indeed preëminently, of *radial significance*. The non-seriousness of play may not be explained away by tracing it to some deeper serious stratum revealing its "real" meaning; on the contrary it is one of the most essential features of man and of his relations to the world that he *can and must* be playful.

In play the individual, however open to and entangled in the world, preserves some sovereignty over the world; he creates a sphere of existence which belongs to him and to which he gives form. But the world is not forgotten; rather is it taken over into play, copied, changed into make-believe, and revamped. In play, the individual plays always both "himself" and the "world"; contestant and contest, creator and creation, mother and child. The world that he denies in

the *freedom* of play he at the same time affirms in the *content* of play. This takes us back to a theory that has been unjustly thrust aside by modern theories of play. The dictum "Man is completely man only if he plays" comes from Schiller, who also developed the idea¹ that play is so peculiarly human precisely because it lies between animal dependence on the world ("bowed by the yoke of necessity") and divine victory over the world (pure devotion to duty in the Kantian sense). Schiller designates this capacity and necessity for play, which is intrinsic to human nature, as the "play instinct";² and although the term cannot perhaps be subsumed under the present-day conception of "instinct," he is entirely right in principle.

We are at last in a position to do justice to the other theories of play. Each of them sought to set up *one* definite relation between play activity and the serious business of life; there is, however, an indefinite number of these relations, and only a few basic types may be formulated theoretically. It seems appropriate to classify them into theories of the present, past, and future.³

b. *Theories of the present* are those which place play among the present strivings of the individual. The conception may be purely dynamic, or according to content. Where the present available supply of energy is not wholly exhausted by the serious demands of life, the superfluous energy must seek an outlet; whence it is discharged through activities lacking real goals, that is, through play. Herbert Spencer, who set forth this theory, indicates that children have surplus energy to a far greater degree than the young of animals, which they may thus expend in *play*; the more so because during his prolonged youth the child is relieved of many tasks by his parents and teachers.

According to this conception play is really only the externalizing of unresolved vital tensions; there is no essential difference between wriggling and shouting on the one hand and creating or playing on the other. For since man—according to Spencer—must actively externalize the confined energy *in some way*, he seizes upon the nearest one, taking to activities that he sees in others; thus the content of play is determined purely by imitation.

This theory rightly emphasizes one prerequisite to all play—surplus energy. It is a fact that when all the energy of the individual is absorbed by the business of living, e.g., through heavy overloading of school work or vocational requirements, there is no chance for play even in the scanty periods of leisure. Thus the intensity of a child's playing plainly depends upon his physical and mental freshness;

¹ In his *Letters on the aesthetic education of man*.

² *Spieltrieb*.

³ I reproduce this classification from my *Psychology of Early Childhood*, pp. 308 ff. We were guided by a similar classification for imagination in every day life, p. 331 above.

where sickness, for instance, conscripts the available energy in a battle to preserve life, it may dwindle to zero.

The serviceability of the theory, however, is thereby exhausted. As will become patent at once, reduction of the content of all play to casual and accidental imitation, is utterly inadequate.

Another dynamic theory, the "recreation theory" (first formulated by M. Lazarus), goes deeper. Contrary to Spencer's conception, it starts with the energy *consumed* as required by serious business, which requires *compensation* in the form of recreation. But recreation does not occur solely through resting and sleeping, but also through activity which banishes care—play. It is astonishing what reserves of energy remain at the disposal of even a fatigued person, provided only that no further serious and momentous activity is demanded of him. Even intense concentration of attention (e.g., in playing chess or cards) is a minor drain because the undertaking is not serious.

This theory is obviously fitted primarily to the play of *adults*. For them, play is in fact an intermediate activity between occupation and complete rest. The individual who was but lately driven by his duties is not always ready at once and without some transition to experience *dolce far niente*, but seeks to "taper off" gradually; and substitution of the real world by a make-believe world is admirably suited to this end. Lack of responsibility is recreative.

The recreation theory may be applied to young people when a separation between work and play exists, and hence to school children. Especially when the child's school work is still experienced as an external, unintegrated compulsion, the ability to shift over to play makes for renewal of energy as well as for intrinsic enjoyment. On the other hand, in the characteristic "age of play" there is as yet no other kind of exacting activity from which the infant seeks diversion through play; here the theory must be rejected.

All the remaining theories of the present are concerned with the *content* of play, which they attempt to explain by the impulses, interests, and bents residing in the child. That the *instinct of imitation* is primary in this regard is incontestable. In primitive stages and in states of uninhibited development the sensory-motor process is unitary and what is perceived is at once transformed into analogous action. Such imitativeness may be exerted upon every perceived event of the external world, and thus does not stop with those activities which are imposed upon the child with a view to his learning them; the most varied occurrences of domestic life and of the town, notable events, activities in various occupations, and of animals and commerce, are taken over into play. Likewise the stimuli in social games consist in large part in matching and reproducing the actions of others.

None the less, it would be wrong to suppose with Spencer that in playing, the child imitates only because the overflowing energy must become active with some material or other. For imitation itself is a process *directed from within*. Out of the infinite environmental impressions possible for imitation, the individual when playing seizes only upon the one which is suited to his inner nature, and produces his imitation by the same criterion.

A boy and a girl, playing at the beach, are doing the "same" thing when viewed from outside; they pile up a heap of sand and dig a tunnel through it. But this identical play act means for the boy "I made a railroad tunnel," and for the girl, "I made an oven." Both have seen tunnels and ovens; but in playing, the girl does not think of imitating a tunnel nor the boy an oven.

Sometimes selectivity and transformation are carried so far in imitation that the external suggestion of the content of play subsides completely before these inner impulses; and even in pronouncedly imitative people play is never mere copying, but is always toned by personal inner factors. This brings us to a peculiar double aspect. The individual projects his nature into his play, both *directly and indirectly*.

There are certain traits of personality which possess such power that they exhibit themselves in all activities, serious and playful alike; perhaps even more markedly in the latter because the individual is more spontaneous. Thus the nature and content of play become the unmasked expression of personality. Characterial qualities like strength of will, capricious or stolid behavior, bossiness, conformity, crudeness and delicacy of feeling, pedantry, social or asocial tendencies, give themselves away in play no less than in working, professional, and family life; the same is true of intellectual traits like originality, wit, ability to synthesize, narrowness of outlook, etc. Special directions of interest and talents of a technological, administrative, organizing, aggressive, intellectual sort determine the content of play just as they do the conduct of serious affairs. But the translation of personality tendencies into expression through play is not always so simple and unidimensional.

Since in the course of play the individual sets up his *own* realm of make-believe by *free* activity, it is just there that those inner strivings may take effect which are held in abeyance by the stern realities of life. Hence in such cases the content of play adopts a certain *contrariety* to the shaping of reality—in correspondence with that inconsistency which we described above between dreams and reality. Play, in fact, likewise possesses the function of *abreaching through harmless material personality tendencies that would otherwise be repressed*.

At the outset all play signifies bursting the confines of real life, for children and adults alike. When the child plays "rôles," letter carrier or chauffeur, mother (to dolls) or storekeeper, etc., the purely fictitious exchange of one self for another, this transporting of oneself into a different kind of person with a different occupation, constitutes infinite extension and enrichment. When after wearing, monotonous activity in an office or factory the adult plays cards or billiards in the evening, he experiences, in however dilute a form, the excitement of battle, of rivalry, of victory and conquest; and if he takes part in amateur theatricals, the mighty passions and mental flights of the hero he portrays are his own for the time being at least.

The narrowness of the real self, however, is denied not only through the expansion of fancy, but sometimes by complete reversal, called *overcompensation for inferiority*. This view forms the leading principle of the theory of play in Individual Psychology as advanced by Alfred Adler and his pupils. Here the make-believe world of play grants all that the real world denies; and the more oppressive the straitness of reality, the more exaggerated *in play* do power and splendor, ability and domination, become. The child who is held down by a hundred commands, prohibitions, and restrictions, strives in playing to feel superior; while building he is arbitrary with his blocks; he plays the tyrant over other (real or imaginary) beings in playing with animals and dolls, and while playing chauffeur or teacher; and in acting out fairy tales he favors enchanters and sprites, princes, and giants. And many an adolescent and adult may bristle in play with exaggerated energy and contentiousness because in real life he must put up helplessly with so many slights.

But care should be taken not to lay down this compensatory interpretation of play as universally applicable. Direct expressions of personality are certainly far more frequent in play than these indirect and paradoxical expressions, and closer psychological observation is bound to take account of the difference. Vigorous and spontaneous play looks different when it derives from a vigorous and spontaneous *nature* than when it is an overcompensation for weakness.

In this connection comes finally the *psychoanalytical* theory of play. Here too play is interpreted as a venting of repressed impulses; but these impulses are always allocated as such to the sphere of sexuality. Occasionally it is a question of overt sexual play (e.g., manipulation of the sex organs) and playful flirtation; for the most part the content of play, in itself non-sexual, is so reinterpreted by psychoanalysis that it passes for symbols of sexual ideas and strivings. Thus behind the use of the whip in playing coachman and horse a sadistic impulse is supposed to be hiding; playing "pig-sticking," where logs of wood are stabbed, is supposed to reveal the "oedipus complex."

That impulsive tendencies of such a kind are *occasionally* involved may apply to play to the same extent and for the same reasons as to dreams and other imaginal activities. In pathological cases extensive sexualizing of play may frequently occur. But in general psychology the theory of play must regard sexual motivation as but one of many groups of motives determining the content of play, and surely not as the most important of these. There is no *one* instinct specifically qualified to become the "play instinct"; on the contrary, the play-world is a panorama of *all* human impulses and wishes, fields of instinct, and divisions of interest, which appear sometimes as copies in their true color values although fainter, sometimes in a photographic negative, and sometimes in distortion and in false coloring.

What is more, not only the present of the individual at play is portrayed in this microcosmic picture book; it also contains an account of the past and a foretaste of what is to come. In other words, play must also be considered from the point of view of *developmental psychology*.

c. *Theories of the past.* Since play tendencies are affixed partly to inner predispositions it was an obvious move to bring principles of heredity to bear upon play. This was first done by the American child psychologist G. Stanley Hall, who attempted to apply Haeckel's well-known "biogenetic law" to mental activities. If under this law every growing individual recapitulates the development of the race, we should discover phenomena in the child that in some way resemble earlier but long obsolete stages of human development. These would be forms of play. In children's play primitive modes of human existence come to life again: the simplest basic relationships of society and struggle, animistic vivification of non-living objects (fetishes, dolls, and toy animals), the use of obsolete weapons (arrows, slingshots), magic, and incantation, the romantic exploits of Indians and bandits. This reawakening of atavistic impulses, however, is no longer carried out in seriousness but *solely* as play (i.e., in carefree counterfeit). This phase of the theory recognizes the purposive significance of play in the ability of the individual to activate primitive inherited strivings which are no longer suited to present-day culture, and thus to "ab-react" in an innocuous manner.

If this theory were taken literally the play of children would not involve self-active and formative *imagination*, but only unconscious recollection. Its inadequacy proceeds from this very fact. And the daring tenet that the child repeats ancestral mental stages in the same order is no longer serviceable for science. Nevertheless, the conception of the "past reference" of play may be freed from its context of genetics, and the developmental import unearthed; the

result is the opportunity to bring not only children's play but all play, under a new point of view.

Every person is *stratified*, containing dispositions and attitudes that hover at various personal levels, and which may become actualized whenever the total personal situation is appropriate. Some of these strata are characterized by their temporal coextensiveness. They derive in part from inheritance ("archaic" or "atavistic" strata), and in part from one's individual past ("infantile," "adolescent" strata). The personal situation of non-seriousness is especially conducive to the resurgence of such strata. Where the individual is not yet under the yoke of practical reality with all its consequences (as in childhood), and also where he emerges now and then from the seriousness of school-work, occupation, etc. (the vacation time of pupils and adults) those latent tendencies may be indulged. They are ready to make their appearance but also to recede, accordingly as serious undertakings allow them free play. Here it is no question of predominantly fixed contents (as Hall's theory involves), which are mnemically renewed out of the past, but of *formal attitudes*, directedness of a general sort, and more primitive shades of feeling. On this account there persists a considerable potentiality for new creations by way of formative imagination.

In this restricted sense there is no question but that every individual, child and adult alike, is more *primitive* when playing than when taking things seriously. Larger children may become babies again in play, and adults who spend their vacations out of doors revert to an healthful, joyous, and recreative infantilism.

d. Theories of the future. This past-reference, however, is balanced by the meaning of play in terms of the *future*. One who plays plays not only regressively but also progressively. The "theory of the future" erected a generation ago by Karl Groos in particular, must be extended in terms of personalistics and connected with the other theories.

The future dwells in every instant of the present, but not merely because it is *consciously* foreseen, expected, planned, or desired. The personal entelechy is operative in a preparatory way, long before the date of its true realization, and long before it is projected as a conscious purpose. Play activity may be regarded as this sort of *embryonic prototype* of serious activity. Predispositions, instincts, wishes, phases of development, whose time has not yet arrived, may yet possess so strong an inner urge that they no longer remain altogether latent; seeking possible means of expression, they are on the other hand still not strong and ingrained enough to lead to real activity; and so they take possession of the make-believe world of play. This anticipation is entirely *unconscious*; as far as his consciousness is concerned the indi-

vidual is imbued wholly with the momentary pleasure of playing, and does not suspect that what is to come later is prepared for in his play. One might begin by establishing the *dissonance* between this tendency and the far removed meaningful application. As a matter of fact this dissonance often leads to marked incompetence of performance in play. Thus a small boy's building will be crooked and fall down a hundred times because neither the talent for construction nor his comprehension of the laws of statics are yet sufficiently mature to make possible a well-designed building. Thus the little girl handles her doll so ineptly while dressing and bathing it that a living child would be injured by the treatment; her abilities as a nurse are still undeveloped.

But this inconsistency holds water only as long as we consider the momentary fitness of play. Passing to its significance for the future we discover three important aspects, those of pre-practice, pre-expression, and pre-groping.

Groos' theory of play centered around *pre-practice*. In contrast to animals, man is born very immature; the high level of development that he is finally to attain, and which, likewise in contrast to animals, is to surpass the level of his ancestors, requires a lengthy period of preparation—youth—and uninterrupted preparatory activity—play. Deliberate learning and practice are inadequate, the more so when imposed from without, while the function of play represents a continuing, spontaneous, and non-compulsory self-instruction of the child, an unwitting and involuntary practice function. The very incompetence of performance in play has much value as practice; statics cannot be brought home more impressively to the child building with his blocks than through his observation from his perpetually collapsing structures of how it must *not* be done and how better results are to be attained. The proverb “adversity is the school of wisdom” also proves true for play-adversity.

This practice value of play is all-embracing; bodily movements, creativity, sociability, intellect—all become trained through play. The playful kicking, clutching, and babbling of the infant is pre-practice for future locomotion, grasping, and speaking. From constructive toys older children learn manipulation, appropriate disposition of the materials, and proper use of natural powers. Drawing and modelling games lead to mastery of space and the aesthetic sense; playing with dolls on the part of girls is by virtue of its untiring and varied nature an irreplaceable preparation for later functioning as a mother, nurse, housewife. In social games the child learns to command and obey, to organize and to compete; in games with rules the child acknowledges abstract law—a preparation for future recognition of ethical notions.

But the future meaning of play is not exhausted by this utilitarian effect of practice; it is attached still more deeply within the person. For play also represents a *prophesying* of the period to come; it has *predictive* value in expression. This results in the paradox that the child in his play is more fully developed and more mature than the same child in his relationship to the real world.

Permit a quotation from one of my own books: "Whoever takes occasion to observe closely a little girl playing with her dolls is at once struck and moved by the way in which future motherhood casts its shadow before. Not for a score of years, perhaps, will it become an actual life mode of the personality; but as an expressive form it is already in evidence in such intensity and such ardor that the remote future is presaged with ghostlike vividness. It is no apparition, however, but simply one of the most affecting proofs of the unity of personal life, which cannot be disrupted by any division into periods of time."¹

This prophetic pre-expression naturally leaves off where the indefiniteness of predisposition begins. There are even definite periods in which this uncertainty predominates, precluding the direct predictive relating of play behavior with future forms. Such a period is notably that of puberty.

But even this indefinite feeling for future possibilities imparts to play the new function of *pre-groping*; it becomes the device of an unconscious probing of various possibilities. With younger children, for that matter, it is noticeable at times how they alternate different interests in their play, which can sometimes be awakened only by external impulsions, such as models and suggestions, gifts of particular toys, the equipment of a Kindergarten, etc.; only through activity in such cases does it become clear which interest is most lasting. But this phenomenon is far more important during adolescence. For the adolescent now commences to draw away from the naïve playful behavior of childhood; whatever he strives for or does he takes seriously in a *subjective* sense to an extraordinary degree, so long as it gratifies him, and he would indignantly reject the description of this activity as "play." But fortunately, the activity does not have the profundity nor the weight of genuine seriousness; for as yet no appropriate capacity nor sureness of aim corresponds to the striving. Thus the activity of the adolescent is in reality only one term in a series of pre-groping activities, although he at times identifies himself with it completely. I call this peculiar, ambivalent mode of behavior *Ernstspiel*. The illusion of serious business is necessary here because in an activity that shows up as play from start to finish, those applications of feeling and will would not occur which are needed for

¹ *Wertphilosophie*, p. 155.

testing essential fitness or unfitness. But the rapid throwing off of these affective stresses as soon as another life experiment is taken up, displays the character of play. This pre-groping reveals itself in its most characteristic manner in the puppy-love of adolescence, but it is similarly present in the formation of secret clubs, in artistic or technical projects (writing a drama, constructing perpetual motion machines), in the zeal to effect reforms of society etc. It is important that the complementary relationship between pre-groping and pre-expression be kept in view; the more the adolescent is involved in the stage of preparatory groping, the less reason there is for regarding any particular mode of *Ernstspiel* as pre-expression and hence as a reliable symptom of the ultimate personality structure.

III. CREATING¹

I. CREATING IN GENERAL

a. *Conception and product.* We refer to creative imagination when new objective formations and processes develop out of imagination, taking an independent existence apart from the individual producing them. A work of art (e.g., a painting) is both a physical object and a bearer of intellectual values; a hero-cult is at the same time a "cult" (that is, an activity operating visibly in the world) and a mythology (that is, an intellectual content which is sacred to the people).

In the same way both are present in the creative individual himself; on the mental side imagination runs its course, and on the bodily side the acts necessary for its organization are carried out. But this implicit fourfold division of creative imagination is allowable only in abstraction; in reality the several aspects constitute a dynamic complex unity like the person who brings about the creation.

The purely intramental fantasy constructions of the *artist* are not ready-made contents which exist *prior* to the process of material creation and which remain distinct from it while it is going on; on the contrary, creation is a *psychophysically neutral function* whose foci are constantly changing. The imaginative onset which, as "conception," introduces a new act of creation, is less of a "vision" than an "impulse"; a vague consciousness of what is to be produced, combined with a strong activating force.² The phantasm, becoming concrete, clarified, and modified, goes on to affect further creative acts,

¹ In this section only a few topics and approaches in the large field of the psychology of artistic creation and appreciation can receive treatment. For further information the reader is referred to the *Personalistische Ästhetik* of Friedrich Kainz, to the books on the psychology of art, and to the psychological portions of the works on aesthetics by Dessoir, Müller-Freienfels, Utitz, *et al.*

² Compare the analogous rôle of "problematics" in the field of thinking, p. 285.

after a time achieving freedom, and is confronted by the product. This may mean harmonious agreement between conception and product, or it may mean a violent disturbance of mental equilibrium. Sometimes the creator is surprised at the reality of the product, surpassing as it does his fondest imaginings; sometimes he feels pained inadequacy over the failure to cast his inner vision into an outer mold.

It is equally impossible to distinguish clearly between the physical and the psychical in the created *object*. In terms of experience, the material object may not be separated from the intellectual content either by its creator or by those individuals who accept the created work (the public, connoisseurs, etc.); on the contrary, a production may become a work of art or the symbol for a cult only because its intellectual content also comes to expression.

b. *Individual and collective creativity (works of art and myths.)* If the creative functioning of imagination in *present-day Western culture* is made the sole object of consideration, it appears to be the product of individual personalities, and even the *highest degree of individual activity*. But under broader perspectives, both historical and cultural, it becomes evident that completely individualized products of imagination represent but infrequent phenomena, and that even those in the present cultural epoch remain firmly attached to a foundation in the *collective imagination*.

In order to make this idea clear it is necessary only to contrast the main types, just mentioned, of creative imagining, *works of art and myths*. In reality these are simply two poles of a powerful, constantly repeated process of development. That myths are products of creative imagination is no less certain than that they are not produced by single individuals. Rather are they the typical and eternal form of the work of collective imagination. This being the case, discussion of them belongs not to the psychology of the individual person with which we are here concerned, but to folk and cultural psychology. We must nevertheless indicate the *relation of the collective to the personal factor*.

Indissolubly bound up with cultus and magic, the myth-making imagination produces from an alien world of actuality the homely world of clan, horde, family, and race.¹ This collective mental process did not run its course and come to a stop at some time in the prehistoric or historic past, enabling us to look back upon myth-making as a long-obsolete phase in human development; on the contrary it is necessarily part and parcel of all human societies, and the continual emergence of new myths can be observed.

¹ The extent to which all *historical consciousness* must consequently also be mythology, cannot be discussed here; as one source, see *Wertphilosophie*, p. 277.

It goes without saying that the formation of a myth is possible only through the coöperation of the individuals in the myth-bearing society, but the contribution of the individual is completely anonymous; there is no separation of *receptive* imagination, which takes in what is heard, from *reproductive* imagination, which repeats it and gives it objective form (e.g., in cult acts, in the medicine dance etc.), or from *productive* imagination, which transforms it and adds new details. The individual functions altogether as the bearer of the super-individual and is unaware that his particular creative power participates in the activity.

This agrees with the fact that in collective primitive imagination there is also no separation of different *domains* of imaginative activity; the mythology of the cult is the common ground for the gradual differentiation of religion, art, science, morality, etc. This fact is especially important in the case of the phenomenon of art-and-the-artist. "Art" as an autonomous domain, and "the artist" as the individual creator of unique, deliberate, and unduplicated works,—these are phenomena of late development; and artists must forever renew their inspiration and justify their claims to "originality" by steeping themselves in the common primitive origin of the collective myth. The Homeric epics are not pure works of art, but transformed myths; Homer himself not an individual poet but a mythical embodiment of the myth-making forces. Mediaeval madonnas, Goethe's *Faust*, Wagner's music-dramas, moreover, are something more than mere arbitrary productions of individual genius; they have become a part of mythology because they were nurtured by the sources of collective life, which are more than aesthetic.

2. SOME ASPECTS OF ARTISTIC CREATIVITY

a. *Development of individualization.* Out of the collective depths just mentioned there arises an individualized creativity which grows with advancing culture. Indeed the emancipation of art concomitantly with the individualization of the artist is one of the most striking developments in the evolution of the human spirit. A dual process is involved in this *personal* creative imagination: the close relating of the creative personality to the production, and the transformation of objective being into aesthetic representation.

It would be a rewarding undertaking in psychology to investigate the significance of *anonymity* in artistic production. There is an unquestioned ("naïve") anonymity¹ among those who feel themselves to be merely the executive agents of collective forces. The creators of folk art, like folk songs, folk epics, folk dances, cult drama, temples, folk costumes, practical arts, etc. have therefore naturally remained

¹ We shall be concerned soon (p. 365) with a second form of anonymity.

anonymous. In the middle ages the distinction between the artist and the artisan, these designations being then practically equivalent, was not yet fully drawn. It was completely foreign to the sculptor who carved a sacred image as a decoration on the façade of the minster, to seek to realize in his execution his personal vision, or even to make his own name famous; he served the super-individual demand of the cult and saw nothing paradoxical in placing his creation so high up that no human eye could be pleased by its beauty.

In our time, ascribing the work to a person and consequently valuing the personal originality of the production, has of course become the rule for painters, sculptors, poets and authors; but with architects, for instance, we are still on a borderline. To the public at large buildings still remain anonymous productions of the collective spirit. While the orchestra player and the supernumerary actor remain anonymous, the conductor and the leading players are individual artists with "names."

b. Originality and responsibility. The connecting of creations with individual persons and names imparts to creative imagination a highly specific function, doubly constituted by *originality* and *individual responsibility*. The consciousness of adding something novel and possessed of value to a matter-of-fact world by *one's own instigation* is numbered as one of the most living among all value-experiences of man. To be "original" means to be the *origin*, and originality is successful only in the struggle against every day values. One may thus easily overrate and glorify artistic individuality, a striking example being the romanticist cult of genius. It is exaggerated in the boundless self-esteem and vanity of many artists, and these traits are naturally and characteristically bound the more strongly to the person, the more closely the performance is associated with the existence of the moment. Present recognition of his work is disproportionately of greater weight for the actor than for the creator of works of art, who is able with a certain resignation to leave the merit of his productions to later acclaim and posthumous fame. Furthermore the desire to be original may lead the artist to the mistaken notion that what is "different" and out-of-the-ordinary *in itself* represents a new "value." Then the production becomes a mere external projection of a personality, having the special features of that personality and bearing the stamp of a mad chase after originality, without imputing any trans-personal significance to the novelty.

Consequently the restraint of *individual responsibility* should never relax its grip. The instant an artist projects a work beyond his bare intramental imagination, he must reckon with the *world*, which also signifies to him a super-individual obligation. Precisely because he produces "novelty" in each work, his responsibility is many times

greater than that of the nameless artists of earlier times or of the artisans of today, who may fit their productions naturally into the existing world of things and values. This responsibility may be *wholly conscious*, in the form of the conviction of an inner mission or of a gift of vision; an artist of this type makes less of the individual "novelty" of his work than of the fact that out of a new perspective he organizes *objective* material that had remained unorganized. But even when this idea of a mission does not operate consciously, responsibility may play a part as the motive. The mere transcending of a purely make-believe activity of conception, that is, the *will to produce*, is thereby conditioned; for it is only through his productions that the artist may become a member of society and a participant in its culture. When creativity and responsibility conflict, the consequence may be *concession* and *reflected anonymity*.

Through *concession*, the artist to a large degree surrenders his creative imagination to points of view which are demanded or expected of him by the world in return for commissions, patronage, popular response, etc. The most remarkable complications ensue: in countless instances the highest type of artistic creation is made possible only through commissions or through yielding to requirements that have any but aesthetic or artistic significance. A decadent "art for art's sake" envisions the acme of art only in a work of art that is detached from all incidental culture (and thereby from didacticism). But to be sure, the border line between inspiration and enslavement of creative imagination by commissions and social compulsion is not hard and fast. Not every artist under commission has the power, like Michelangelo's in decorating the Sistine Chapel, to express his originality within prescribed limits; and not every didactic poet is able, like Lessing, in his *Nathan the Wise*, at the same time to form a creative work out of his ideal of tolerance.

In these complications and conflicts there originates a *reflected anonymity* that is altogether different in kind from the naïve anonymity previously mentioned. When the modern artist is anonymous, he *wants* to hide himself, and declines individual responsibility. This may be a necessary refuge in order to be relieved of all those difficulties that would have compelling force if the world were to identify him with his product. But it may also signify an intrapersonal splitting; the producer is unable to stand behind his work with his name, and hence with his whole person, because it corresponds to only *one* side, *one* stratum, *one* phase of the person and must be renounced by other strata of the very same person.¹

¹ A typical example of this kind of anonymity may be found in Soeren Kierkegaard, who wrote under the most varied *noms de plume* because he could not reconcile any of his views with his total being. On this topic see also the book by Fritz Fischer.

This epitomizes the most highly subjective form of creative imagination, in which originality is able to flourish unadulterated and untrammeled even to the point of caprice, while at the same time responsibility in the face of transpersonal functioning of creative imagination dwindles to a minimum.

c. *Make-believe.* Like the artist's creativity, the reality-reference of the content of his productions is also individualized. He neither devotes himself to an unbounded subjectivity and solipsism nor attributes to his creation the full reality of practical life and of general objectivity. Rather does he experience—and expect the public to experience—a peculiar reality of an intermediate kind, half playful and half serious, a world of appearance or make-believe. Here indeed the analogy between art and play becomes evident; amid the pressure and compulsion of the hard world of facts there is built up another reality, enjoyable and intelligible on its own account. It is not unrelated to the other kind, for it is its reflection, its symbolical and expressional form, its herald or its echo. But its objectivity is of a lesser degree; the individual may enter and abandon it as he pleases. It is just this deliberate shifting which confirms the artist's creative consciousness of freedom, and gives the connoisseur a primary source of aesthetic pleasure. Not only is the fluctuation between the world of make-believe and the world of reality possible, but within the world of make-believe the most varied degrees of approximation *to* and remoteness *from* complete reality may be realized. Artistic production may be experienced as dream-like, as phantom-like, as play-like, as a world of *Ernstspiel*.

There are theorists in aesthetics (e.g., Konrad Lange) who find the simple and general basis of aesthetic experience in this ability to shift arbitrarily between illusory and objective levels of reality. But the phenomenon has no such universal significance. It does not occur (or at best it occurs to a rudimentary extent) where creative imagination is still confined to the collective level; for in these primitive stages all of reality is *both* practical and magical, playful and serious; art is unseparated from total culture, and accordingly, make-believe from objective being. The quality of make-believe in creative imagination is thus the clearer, the more individualistically the artist experiences his work of production, and the more forcefully art becomes salient as a particular domain against the background of total culture.

3. IMAGINATION IN SCIENCE

In conclusion let it be said that individual creative imagination is not at all limited to the domain of art. In *scientific* achievements especially it may play a significant part.

In the *natural sciences* it is able to anticipate insights which may be tested out later and elaborated by special scientific methods.

When, for example, Newton envisioned in the swinging of a chandelier and the falling of an apple *one* principle of motion common to both and thereby opened the way to the discovery of gravitation, it was not a case of a purely logical process. Similarly, the Kant-Laplace theory of the formation of the earth from a nebula, and the Darwinian hypothesis of natural selection, became possible only by means of creative intuition.

The imaginative investigator exceeds the bounds of science only when he regards a fantasy as such as an objective fact of science and consequently holds that control by way of the true scientific devices of logic, observation and experiment are superfluous.

It is somewhat different with the *historical* sciences; for here imagination is properly a far more essential part of scientific work. Once the historian has finished with the mere collecting of material he is faced with the task of reconstructing unique occurrences. Experimentation cannot be made use of here, and logic, which yields only general concepts, is inadequate; he must produce a concrete *total picture* in which all the raw source materials are fused into a unity. This takes imagination. Moreover, and in this he resembles the artist, he must project this intramental total picture externally through a *portrayal* which permits others also to follow out this representation of the past. In the historian there thus dwells of necessity something of the artist with his vision and sense of total form—he differs from the latter only in the fact that he himself applies critical testing by strictly scientific methods to control his production.

Perhaps the designation "creative imagination" for this mental function will be objected to. And in truth, its aim is *re*-productive; a revival of past events. However "something once present" is not a matter of "historical" fact simply because of its having once existed; it is made so only through its meaningful connections with significant totalities having "historicity,"¹ be these peoples, nations, areas of culture, or individuals; and such connections can be substantiated only by more or less creative intuition.

On the borderline of true science are those stylized *biographies* which attempt to fuse all the details of the life of a personality into some intuitively conceived basic mode; in these there seems to be developing a new intermediate area between investigation and art—and thereby between the functions of thought and imagination—as in the case of organized *autobiographies*, which are as Goethe conceived his, "truth and poetry."

¹ On the concept of "historicity," see *Wertphilosophie*, p. 271.

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PART FIVE
STRIVING. ACTING. ACHIEVING

FOREWORD TO PART FIVE

In the two parts that are to follow our approach must as it were *begin anew*. Having dealt in the foregoing parts with those aspects of personal activity which are ordinarily thought of as *intellectual*, we are now concerned with the individual as a feeling, acting, and achieving being. Intellectual activity itself became comprehensible only by studying its emergence from primal personal levels where it was attended by diffuse feeling and immediate striving; in perception, memory, thought, and creation we traced the gradual *emancipation* of intellect from the vital level. Conversely, the activity of emotions and will may be comprehended only by regarding it as a progressive *spiritualizing* of basic vital processes. This signifies an enriching and elevating of those functions which are common to man and animals, by means of strictly human developmental forms.

The topics striving and feeling are so closely interrelated that it is not possible to discuss them separately without doing violence to them. Hence we shall frequently have to skip back and forth.

Part Five deals with the individual in his *active* relations with the world. A few terminological remarks are required here. Any self-contained activity of a person which brings about a meaningful alteration of the world, is an "action." If the personal energy expended is devoted to the result of the action, this is a "performance." The directional aspect of an action as long as the goal is not reached is called "striving." There is in a striving some future urgency, but also a present lack of gratification of the urge; consequently all striving is essentially incomplete and "open" in contrast to acting, which culminates directly in its completion.

On the more primitive¹ levels, striving changes into action without intermediaries; the striving itself keeps altogether to a kind of dim feeling, as the work of *impulse* and instinct. But as soon as striving becomes independent, and anticipates its goal consciously before the deed is performed, *need* arises as a form of inner experience. If the striving and the satisfying act are such poles apart that the transition from one to the other is not found, the need lodges intramentally as a *wish*. But if this polarity is overcome by a special act of transposition, we observe the fact of *willing*. The human will; its attributes, phases, and modes of consummation, together with the personal dispositions which support it, constitute the core of Part Five.

¹ First and foremost is that mode of activity in which there is no striving whatever; the reflex.

CHAPTER XX

PRIMITIVE FORMS OF ACTION AND STRIVING

The basis of all human action is established by the primordial relationships which connect the individual with his heritage and environment. Every individual has so self-evident a place in the series of successive generations and in the present scheme that his activity too is embedded in them to a considerable extent, in a very precise way but without awareness. This primitive "keeping oneself alive" necessitates no objectification of the aims of action, no experience from which one has to learn, and no prevision. It is in these primordial adjustments that man most closely resembles sub-human forms of life; it is these which appear earliest in the development of each individual, long before there can be any trace of voluntary and intelligent action; and these remain basic after the capacity for action gradually rises above them into the realm of object and value, influenced and transformed, to be sure, by specifically human strivings and actions.

Yet even in the most primitive modes of activity two basic tendencies of human action may be distinguished. These are re-action and spontaneous action.¹ The former predominates in the reflex, the latter in impulsive and instinctive actions.

I. REFLEXES

I. INNATE REFLEXES

In the reflex, *stimulation and response* have a *direct connection*. If this unitary connection happens also to be native (that is, not formed during the life of the individual), the reflex is called "innate." The adjustment of stimulus to response may involve the individual as a whole or specific parts of the body and its functions separately.

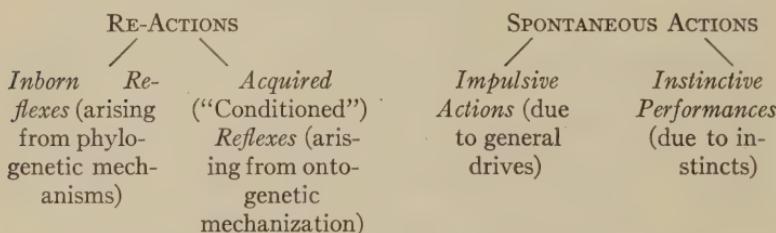
A *total reflex* is activated, for instance, when a man falls into the water. There is abrupt alteration in circulation and respiration, and movements of struggling are set up in the limbs before any kind of suitable movements can be consciously contrived.

Examples of *specific inherited reflexes*: If a finger is thrust into the hand of a newborn child the infant's fingers close around the finger

¹ Cf. p. 89.

of the adult so firmly that the child can be raised by it. When intense light strikes the eye, the pupillary muscles contract and diminish the pupil. If a crumb lodges in the windpipe, a response of coughing ensues, which dislodges it.

PRIMITIVE FORMS OF ACTION



Experimental investigations have revealed still finer adjustments. Stimulation of a portion of the body point by point may arouse the reflex response of a single muscle or of a small group of muscles, etc.

From these examples it will be seen that the innate reflex *as such* is not really a direct concern of psychology, because it takes place, or at least is able to take place, without involving the mental side at all.¹ A dull feeling may accompany its course, but this has no effect upon it. Consequently it is a grotesque reversal of relationship when the attempt is made to replace psychology with a "reflexology," that is, to study in man only that which can be explained by a reflex or a chain of reflexes.

Discussion of reflex action is nevertheless a part of psychology, for the lines connecting reflex action with super-reflex action, and hence with conscious actions of man, are exceedingly manifold. They run in both directions, from reflexes to voluntary actions and back again, as will be demonstrated later.

Reflexes are often described as "mechanical" responses. But this designation holds only by way of contrast with conscious reflection and decision. To be sure, the frequent *compulsion* obtained in the stimulus-response relationship suggests the functioning of a machine; just as an excess of steam pressure always sets the safety valve in action, intense light under normal conditions *always* causes contraction of the pupil of the human eye. When, however, the word "mechanical" is taken as synonymous with "unmeaning" or "aimless," it does not fit the reflex. Nothing whatever is wholly unmeaning in the functioning of living beings; at most the meaning may not become completely realized because the trend of the action is too vague or because other meaningful relations interfere.

¹ Similarly, on the physiological side reflexes occur without involving the cerebrum, transformation from sensory to motor nerve impulses taking place in the spinal cord and other sub-cortical centers.

If the examples of inherited reflexes are viewed in the light of this fact, it will be discovered in every case that the stimulus brings on, not *any* response *indifferently*, but one that *serves a purpose* for the organism or the organ.¹ Indeed, the intensity and extensiveness of reflex movement depend to a great extent upon the personal significance of the stimulus. A sleeper will perhaps respond merely with a reflex toss of the head when a fly crawls across his forehead. If a mosquito bites him, the reflex arc extends to his arm and hand; he makes brushing movements across his forehead with his hand. And if a scorpion bites him, there ensue intense movements of defence, and perhaps even a total reflex, with a convulsive movement of the whole body, waking, and flight.

Still, the *limit* of adaptiveness of innate reflexes must not be overlooked. They are confined to *instantaneous* reaction; thus they lack any of that anticipation which is proper not alone to voluntary actions, but also to instincts. And their adaptiveness is solely *conservational*; they originate no new connections between means and end, but simply renew old connections. This last point is phylogenetic as well as ontogenetic.

Reflexes are preëminently implements that the individual takes over from his forbears in order to adjust himself to necessary conditions of life which pertain *universally* to the race. They represent adaptation to constant and constantly recurring environmental conditions. For novelty that appears in the life sphere of the individual, three possibilities are available:

(1) The difference between the new and the old may remain subliminal; a maladjusted reflex results (thus a white powder that is similar to sugar in consistency or taste, when placed on the tongue, elicits the swallowing reflex, although it is not a nutritive substance). (2) A vague total reflex may result; response is to the novelty not as specific but only in its general character as disturbing and dangerous or as evocative and inviting (effect of shock, flight, movement away from or toward). (3) Inhibition of the reflex may result; the novelty is appraised mentally and implicated in an act of *will*.

2. ACQUIRED REFLEXES

Besides reflexes determined by heredity, considerable attention has recently been paid to those reflexes which are formed during the individual's life (*acquired* reflexes, *conditioned* reflexes). These always depend upon experience which is frequently repeated and represent a simplification of complicated types of action. The chauffeur who has learned that one must pass approaching obstacles on the right, ends

¹ Kurt Goldstein has recently set forth a new theory of reflex action from the point of view of totality, in his *Aufbau des Organismus*.

by making the proper twist of the steering wheel for any obstacle that looms up suddenly before him. Normally his action is purely reflex. He needs neither to take in the stimulus consciously nor to intend his movements consciously. The highly elaborate voluntary actions that were at first required, and which involved a great deal of mental mediation between stimulation and movement—such as noticing and identifying the stimulus, reflecting and deciding, planning movements of a certain type and intensity—have lost more and more of these steps in the course of practice, until only the two end stages are left.

This "mechanization" or "automatization" stands for a lowering of the level, a de-intellectualizing, of the correct adjustment. Yet it plays a very important part in the functioning of the total person. Ordinarily it occurs only in such processes for which conscious participation would be superfluous or even injurious. In making those constantly recurring every day adjustments for which there is a univocal and likewise constantly recurring relation between the demands of the situation and their satisfaction by the person, reflex behavior is swiftest, surest, and most economical. Moreover, the saving of energy that goes with the progressive automatization of accustomed and practiced activities, releases the excess of energy formerly required, for new performances which demand awareness, reflection, and decision. The individual is enabled in a given case to restore his action to the higher level of awareness and voluntary decision.

Let *human locomotion* serve as an example. Whereas much awareness must be devoted to making the first halting steps when a child is learning to walk, walking gradually becomes automatized in such a way that one responds reflexly to the continual little unevennesses along the way, to steps up or down, to slippery spots, etc., with the requisite changes in stepping and with shifts of balance. All this takes place without having to interrupt conscious sets that are otherwise occupied (e.g., with a conversation). But let there be glare ice; reflex walking is instantly cut off, one "adjusts" and "takes care" with each step; in other words, both attention to the stimulus and innervation of the response suddenly become the chief content of conscious action.

The close relationship of the acquired reflex to the teleology of the total person has been obscured in certain recent research projects by the attempt to produce *in the laboratory* new reflexes that appear to be aimless and to depend solely upon the artificial, associative correlation of two disparate terms. This trend was instituted by Pavlov's experiments with dogs. The inherited reflex of the dog, the flowing of saliva when meat is nearby, could be so altered that saliva flowed when the stimulus was the tone of a bell, without any meat being present. The only requisite was that during long practice the meat and the

tone be simultaneously presented again and again. Here too, as in our example of the chauffeur, the intermediate step (the meat) could gradually be eliminated; the difference consists in the fact that the reflex connection that is retained (tone—flow of saliva) appears to be utterly meaningless. Thus the reflexologists (and likewise many proponents of the behavioristic theory) hold that all learning and consequently all intellectual development depend upon the associative establishment of such conditioned reflexes.

To this we must reply that there is in fact a certain kind of learning for which the experiment described above furnishes the simplest model; it is mechanical drilling which sometimes plays a large part with animals, but only a subordinate one with human beings.¹ Pavlov's dog was "drilled" to drool when a specific tone was sounded, just as a monkey can be trained to take off his top hat when certain words are spoken by the trainer, although the "meaning" of this gesture is unknown to him.

But even with these trained reflexes there is still some meaning in terms of the life projects of the individual, and herein lies the principal positive gain of the experiments in reflexology. Our remark above that reflexes are confined wholly to be *present* must not be taken to mean a single point in time. Biologically the present is not a *point* in time, but has extension to a certain degree, brief, of course, for animals; thus the circumstances which accompany the natural stimulus and indeed immediately precede it, may become related to it. This is, in fact, the rôle of the innate reflex; the dog drools on simply *seeing* the meat, *before* actually biting into it for the first time. In other words, the sight of the meat has the force of a *preparatory signal* in the functioning of the reflex. This requires no "psychological" explanation, for the dog need not have any consciousness whatever of the signal-effect of the sight of the meat. And by the same token, the biological significance of the signal-effect of that component of the reflex is unaffected. If a tone is introduced, it will likewise take on the nature of a signal, even when the specific task of the reflex (to secrete saliva in conjunction with food) is not fulfilled. The acquired reflex, like the inherited reflex, has only a *generic* purposiveness, which may in a particular instance actually become a meaningless stereotype. (A parallel to this would occur in the case of a chauffeur to whom the signal-effect of a red light had become so much of a stereotype that he responded with a braking movement on the sudden appearance of every red light, even when he was not in an automobile.) It is paradoxical to attempt to make such a *deranged* reflex the prototype of all learning, animal and human alike, and the basis of the science of human nature. Even outside the reflexologist's

¹ Cf. pp. 197, 198.

laboratory, the training of animals depends largely upon making certain stimuli, the "true" meaning of which the animal cannot fathom, excite reflexes that impart to them the artificial meaning of *signals*, by habituation, the giving of rewards, etc.

II. DRIVES¹

Only a fraction of the primordial activities of man take the form of rigid responses to external stimuli, that is, of reflexes. There are other activities that depend so closely upon *internal* states of the individual that they have relative freedom in their adjustment to external circumstances. Such activities, e.g., nutrition, sex, imitation, come into play only when the inner conditions are aroused. Here we are concerned with *spontaneous actions* in the vital sphere. These are impulsive and instinctive actions arising from dispositional forces called *drives* and *instincts*.

Although drives and instincts are only two different aspects in the causation of human behavior they should be distinguished in our psychological analysis, since "drive" signifies directedness toward goals and "instinct" the mastery of the means leading to the goal.

I. DRIVES AS DIRECTIONAL DISPOSITIONS

Another example taken from food situations may serve to clarify the meaning of "drive" and "impulse." When a piece of meat is presented to a wholly satiated dog, neither the salivary reflex nor an approaching movement takes place. The mechanism of reflex action is blocked by the fact that any inner impulse to eat is lacking. The same piece of meat will cause a quite different effect if offered several hours later—the dog now manifests the salivary reflex and vigorous aggression toward the food. We call this an *impulsive action*, and the permanent inner disposition toward certain goals a "drive" ("Trieb").

A drive, then, is an *innate directional disposition tending toward the realization of personal goals, its transformation into an overt impulsive act being conditioned primarily by the internal dynamics of the person*. This definition requires amplification in various ways.

(1) A drive is a *disposition*, that is, a potential permanent quality. We are unable to think of the person as not in possession of tendencies directed toward the gratification of his primal urges, and these directed tendencies must continue to exist in the form of potential energy even when they do not come to the fore in any current action. Language attempts to express latency of this sort by such characterizations as "the drive is held in check" "is quiescent," "is sati-

¹ In German, *Trieb*.

ated," "is suppressed." The ground for this assumption of latent drives is that of proper occasions, i.e., when the external and *internal* conditions are ripe, the drive can become active; i.e., "is aroused," and "seeks to be gratified."

Only when there are no further possibilities of activation may the drive be said to be "dead." But even here serious errors are known to be possible; thus a seemingly extinct sex drive may come to life again.

(2) A drive is a *directional* disposition, the most direct and least complex but at the same time the vaguest kind of directional disposition that exists in man; its expression is determined by the intensity of the internal urge and the external opportunity for gratification.

(3) Every drive is a particular directional disposition of this kind; consequently there must be many drives in man, since there are many inherent directions of personal activity.

To be sure, as soon as the attempt is made to prepare an "inventory" of drives, a fundamental obstacle is encountered. The objectives of the person and the personal dispositions related to them are not fixed separately in a serial order, but are at bottom simply particular trends that continually issue from the total goal-structure of the person. Care must be taken to avoid the assumption of separate powers; the danger is in slipping back into the old "faculty psychology."

This would lead to subdividing the sex drive, for instance, into a "drive toward tumescence" and a drive toward "detumescence" (as manifested in approach here, in release there), and from another point of view, into an auto-sexual and an hetero-sexual drive; or from still another angle, into an oral, an anal, and a genital drive.

All these divisions are useful since in certain phases of development or in abnormal relationships one or another of these special forms may become relatively independent, or gain the ascendancy. It would nevertheless be preposterous to reduce the sex drive to as many elementary drives as are required to produce the different sexual phenomena. It would be equally meaningless to inquire whether, besides the general "drive toward sociability" some specific modes, as an "imitative drive," a "communicative drive," a "fostering drive," have independent existence or are components, attributes, etc. of the first.

No suggestion of faculty psychology attaches to drives in the *plural*, a usage required for establishing psychological *structures*. The total dispositional direction of the person (his "entelechy") acquires its *structure* through the advancing or retiring, the superior subordination, the allied or contrary striving of the component directions or drives which it contains.

The fact must be stressed that *all* directional sets which inhere in the person belong to the personal structure of drives. This includes both purely vital impulses, which man has in common with animals, and those specifically human drives which man alone possesses.

When the term "drive" is mentioned, the first of these groups usually comes primarily to mind. Within this vital sphere we can form subdivisions under three headings: elementary *drives of self-preservation*, e.g., of nutrition, defence, and flight; elementary *drives of self-development*, e.g., of superiority, adornment, aggression; elementary *social drives*, racial, herd, protective, combative, and imitative drives.

2. HUMAN DRIVES

But there is no reason whatever for restricting the person to these elementary or vital drives, for in *man* there are directional tendencies of quite another sort which are inherent in his total make-up and which spontaneously release personal energy leading to impulsive actions—which have, in short, the nature of drives. These drives are directed toward *intellectual, ideal, and cultural* objectives: drives toward speech, thought, and knowledge; the drive to portray and to create; metaphysical, religious, ethical, political, technological drives and impulses.

Why has there been such long-standing hesitation about describing these dispositions as "drives"? There are two reasons. From the point of view of the theory of *evolution* human drives are more *recent* than the vital ones. This is evident in the animal series, in which certain manifestations of the drives toward communication and toward knowledge (curiosity) occur only in certain highly organized species. It is evident on the human level when primitive and civilized stages are compared; the elementary drives remain relatively constant, while the human drives become gradually more clearly discernible. It is evident, moreover, in the development of the individual; in the newborn infant the vital drives exercise an almost unlimited dominance, evidence of human drives appearing only gradually.

The second point consists in the fact that the higher directional tendencies cannot occur in the form of bare impulsiveness because both the ends and the means to their realization presuppose a higher degree of personal maturity, a range of experience, and a vigorous participation of the will. A man—so runs the argument—who was striving intensively to increase his knowledge would have to possess some foundation of knowledge, would have to raise certain problems, and would have to be able to plan upon and organize in advance his acquisition of further knowledge. Here there can be no talk of insensate urges which discharge immediately into action, as with

the sex drive or the drive to flee. Consequently the designation "drive toward knowing" must appear inappropriate.

Neither argument will hold water. By nature, a drive need neither be manifested at the outset nor occur in a *bare* form. As a *disposition*, that is, as a directive force inherent to the person and having some permanence, a drive may be assumed even where its existence is merely in accordance with possibility; it could be rejected only when its gratification, at whatever time this occurs, might be ascribed exclusively to other factors, e.g., to other drives or to external influences.

Let us keep to the above example. When we run across an individual who aspires to increase his knowledge, it is possible that he does so from striving for esteem, or because he needs it in his occupation, or because it is the usual thing in his circle to learn something and he falls in with this persuasion. If the attempt to trace his striving after knowledge exclusively to such motives is successful, there is then no reason for assuming a drive toward knowledge over and above these. But there are many cases in which the striving after knowledge cannot be explained by these and by other extraneous factors; we must then ascribe to the individual an immediate inner tendency to acquire knowledge which can be described only as a "drive toward knowing." This "primordial curiosity"¹ furnishes the (or *a*) *driving force* for learning and inquiry, and it is immaterial how far this action may also in part be determined by other, non-impulsive components, such as experience, planning, and reflection.

From the point of view of developmental psychology the difference between lower and higher organisms or stages of development does not, in short, consist in the appearance on the higher level of other modes of striving to replace drives which are in no way connected with drives,—but in the fact that in the lower stages drives are chiefly vital in nature and operate primarily through specific impulsive actions, while in the higher stages, both vital and human drives become allied factors in more complex forms of action.

This conception also precludes the regarding of true human drives as mere secondary *products* of the elementary drives. We continually encounter theories of this kind. Sometimes the *drive toward self-preservation* is held to be the sole "primordial" drive; all personal tendencies, be they directed toward other individuals, societies, or ideals, and including love relationships, constructive statecraft, and moral duties, are then represented as disguised forms of egoism. Sometimes it is the sex drive, which is held to be operative not only in true sexual activities, but as the "actual" impulsive force in playful and serious actions of the most varied kinds, in mythological and

¹ Cf. Helge Lundholm, *Conation and Our Conscious Life*.

artistic creations, etc., for which it provides the universal cause; hence in psychoanalysis, impulses to know and to create are simply refined—"sublimated"—sex impulses.

Yet the concept of sublimation is not superfluous. It signifies that the total energy available to the person's impulsive processes, when its discharge into a particular area is thwarted, seeks a different channel—or more properly, is diverted into such a channel. Thus it is not true that one drive "sublimates" into another, but that the *person* emphasizes his total impulsive force in a different way, diverting it to a higher operative level. Viewed at close range, "sublimation" is consequently not a proof of the secondary, merely derivative nature of human drives, but evidence to the contrary. It is only because there resides in man a marked inner readiness and direction for intellectual or creative activity, that liberated energy can be used in spontaneous performance.¹

If, for example, the young Goethe "sublimated" his Wetzlar love episodes as the work of art called *The Sorrows of Werther*, it does not signify that his urge toward artistic portrayal was "merely" a sublimation of his erotic drive, but it means that the higher, but none the less innate, drive toward artistic formation and expression subjugated and made useful those energies which were blocked by the erotic impulse.

3. URGES AND INHIBITIONS

When a drive emerges from the latent state it need not forthwith issue in action; *intermediate* stages usually intervene.

Viewed *dynamically*, the individual feels restless and tense, a dull urge, the desire for some change of the situation. This urge away from the existing state may be at first quite vague (not having become directed upon a specific goal), but despite its indefiniteness, it may increase until it is unbearable, becoming so pent-up at last that discharge of *some* kind must ensue, regardless of whether it is pertinent to personal goals. Thus with a man who is hiding from the enemy in a place of concealment, and for whom everything depends upon not stirring, the impulse to move may finally become so irresistible that he changes his position without regard for the consequences. With castaways on the verge of starving, the nutritive drive leads to the chewing and gulping down of the most impossible objects.

Such "short circuits" of discharge reveal the operation of drive-like impulse in its barest outline. There is no particular adaption to an end, but rather the sheer bursting of the dam, with meaningless engulfing of every end, through unchecked power.

Our examples also show, however, that impulsive acts of this

¹ The term "libido," which is often met with in psychoanalytical cases to describe this *total* personal force, seems dubious because it was taken from the psychology of sex.

primitive kind do not represent activity *normal* for the individual. We had to resort to abnormal situations, in which constraints were erected and maintained for a long time before the outbreak of impulse followed. Life situations in which there are none of these constraints at all, occur in man under normal conditions only in early infancy; and there we may in fact observe wholly diffuse expressions of energy-discharge, such as kicking, screaming, destructiveness, etc. But the impulsive life of man is very quickly brought under the rule of dual forces; in opposition to the *urge* for discharge there appears a constantly widened and strengthened system of *inhibitions* derived from thought, will, habit, and deliberation, and which while never able to extinguish the power of drives, can nevertheless regulate, distribute and sublimate them.

There are still other areas in which discharges not involving choice or deliberation occur; but these too represent "abnormal" situations. They include brief but tyrannical emotion (anger, desperation), the effect of drugs and similar intoxicating substances, and various forms of mental and emotional abnormality and psychopathic predispositions. People who lack inhibitions comprise a definite psychopathic type.

To be sure, the relationship of the dual forces, the urges toward discharge and inhibition, may take the most varied forms even among normal people. One need but think of the well-known *types* of "impulsive people" and "rational people" in order to discover the range of differences obtaining between them.

Whenever a drive is activated gradually the accompanying experience is altered. A bare urge "away from" becomes an "urge toward" something; instead of a mere change of the present situation, a change in a special direction is desired. A feeling of this kind, whose trend is from present lack to future fulfilment, is called a *need*. This concept is central to the psychology of human motivation.¹

III. NEEDS

I. THE DYNAMICS OF NEEDS

Man's needs differ from those of animals in kind and in degree, not only because his life is beset with a far greater multiplicity of aims, but also because his impulses discharge with far less immediacy. Needs first arise when an impulse is not able to be resolved directly through action, but is restrained by external or internal inhibitions and is restricted *in the beginning* to *intramental* devices.

¹ For references in recent time to the psychological theory of needs, see Lewin, Katz, McDougall, Lundholm, Szymansky, and many works on psychoanalysis and individual psychology.

On the other hand, we call such an inner state of feeling a need only when it is bound up with *impulsive force*, that is, when it is qualified to set personal activity in the direction of the goal. In this respect needs differ from wishes, longing, and other states of feeling which by nature remain intramental. Compare these two statements, made by an overworked man: "I wish to relax," and "I have a need for relaxation." Only in the second case is action to be expected.

Unless it dies out, a need has a kind of self-increasing force within itself. Even though it may at times be thrust into the background by feelings of a different kind and direction, it is constantly rekindled from its unfulfilled state. The longer the process lasts, the more difficult is it for the individual to concentrate upon activity in some other quarter; finally the degree of tension becomes so high that the need is quite spontaneously transformed into activity, or becomes released by some insignificant stimulus. And this action approximates the type of pure impulsive action more closely if the need is pent-up; there is a kind of *inverse ratio between the intensity of the need and the level of organization of the act of fulfilment*. "Hunger is the best cook"; i.e., a strongly intensified need for nutrition is not choosy, so long as there is some opportunity for gratification.

2. INTERNAL AND EXTERNAL CONDITIONS OF NEEDS

With needs, as with reflexes and drives, a distinction must be made between those goal-sets which are hereditary and those which are acquired by experience.¹ For example, the drive toward self-preservation of every living creature is such that after a long period of time has elapsed since moisture was taken in, a need for moisture, at first dull, then more and more insistent as feeling, and at last torturing, called "thirst," occurs. This need requires no experience; it may, as in a new-born child that cannot be given the breast right away, declare its intensity by vigorous expression, and its origin by the immediate selection of the proper means (sucking movements as soon as the breast is given). But when a grown man, on quitting work, perceives the need of drinking a glass of beer, this "thirst" is of an entirely different sort; it is *objectively charged*, and the object could be known only from experience. The desire he has is not simply to take in moisture, but to take in a liquid of a very definite kind.

The relation between the two factors which give rise to needs is very complicated and still but dimly understood by science. A need is made specific and particular to a large extent at the outset

¹ D. Katz recently devised a "two-component" theory of needs, which he applied especially to the need for nutrition.

by external influences; thus in countries where beer is little known, the specific thirst takes a different direction. Or, to put it in another way, the generalized drive which every person has for enlarging intellectual horizons¹ will acquire for one person the form of a need to read, for another the need to travel and observe, and for a third, the need to experiment. But these various individuals must first have learned that there exist things to read, the possibility of traveling, and machinery and instruments.

The kind of "experience" that we meet here is especially profound. Its effect is not the bare receiving of impressions through the senses, nor the mere arranging of knowledge, nor yet the mere possession of recollections—but the setting of objective goals. It percolates through the purely sensory and intellectualistic stratum down into the stratum of purposive personal activity, and brings about a multiplication, refinement, and flexibility of needs which raises man far above animals. It is indispensable to civilization and culture. Refinement of needs, constant necessity for new needs (the second derivative, so to speak, of needs) self-destructive needs (so-called "manias") are found only in man.

The close connection between needs and the world may also be considered from the side of the *object*. An individual's personal world is not only the sum total of things and processes which he perceives and thinks out, but also the world of possible aims and fulfilments of needs. Indeed, it is the latter kind of world long before it is the former. No object belongs to the personal world of the naïve individual because it has this or that form, size, or color, or this or that material or logical significance, but because it is capable of inciting and gratifying needs. It is to the credit of Kurt Lewin that he brought to light this characteristic feature of the personal world of things. He calls the need-relation of things their *valence* (*Aufforderungscharakter*). Let us present the graduated range of valences in Lewin's own words:²

"Fine weather, a certain view, invite one to take a walk. A flight of stairs entices the two-year-old to clamber up and jump down; doors entice him to open and slam them; bits of crumbs, to pick them up; a dog, to pat it; the blocks lure him to playing with them; chocolate or the piece of cake want to be eaten, etc. . . ."

"The *intensity* with which the attraction proceeding from a thing or an event is exerted upon us varies greatly. Beginning with the "irresistible allure" to which child or adult yields without reflecting and which can be overmastered with difficulty or not at all, the range includes all the transitions from the nature of a command to "provocation." These

¹ "Primordial curiosity" (Helge Lundholm). See p. 383.

² *Vorsatz, Wille und Bedürfnis*, p. 60.

modes of attraction are easy to resist, and make themselves felt only if the person affected by them is himself endeavoring to respond. The term 'valence' (*Aufforderungscharakter*) is intended to cover all these different degrees."

But Lewin's last observation reveals that the concept of "valence" needs supplementing. Lewin ascribes the *weakest* degree of valence to those things which do not in themselves impel needs, but which must be *sought out* by existing needs. But does that make the relation of such things to needs in any way *weak*? The contrary is frequently the case. Human needs do not operate solely in a reactive way upon the objects in the world, through being kindled by them, but also in a quite *spontaneous* way. Needs pressing for satisfaction seek approach to things. To the dual form of personal activity (reaction and spontaneous action) there corresponds a dual form of the character of objects. On this account I set *materiality* (*Materialcharakter*) beside valence.¹

What part is played by a crude lump of clay in the personal world of a sculptor? He certainly feels *enticed* to take the lump in his hand and to mold it; the clay has irresistible valence. But after giving the first impetus the clay retains a dynamic relationship to the sculptor; it now becomes the *essential material* which activates the need for formation and creation.

The variegated conditioning of human needs raises questions of great cultural, political, and sociological moment. If needs are dependent upon external factors, does this mean that by providing simply the appropriate situations and materials we can *produce* needs from without and bestow on things the qualities of "valence" and "materiality"?

Many indications point to this. Thus colonization has constantly brought unknown pleasures and arts (e.g., alcohol, firearms) to more primitive peoples, thus arousing previously unknown needs. The effect of progress in technology and communication has been to give wide areas of mankind on all levels the need for the telephone, cinema, radio, vacations, stylish clothes, etc.

Considerations of this kind have at times even led to the contention that it is the task of the economy, of colonization, and of industry, not only to satisfy existing needs but to *create new needs* and thereby to increase the economic activity which gratifies needs. On the other hand, the conclusion has been drawn from the conditioning of needs upon externals that needs may also be affected *negatively*; by withholding their ends it must also be possible to reduce the needs themselves to the vanishing point. This applies notably to the fight against narcotics, from international onslaughts of the

¹ See p. 89; also *Studien zur Personwissenschaft*, p. 85.

opium trade to anti-alcohol legislation of various countries; and likewise to the prohibition of erotic literature and pictures and to similar measures.

It is possible to clarify the problem only by making use of the theory of *convergence*. In order for needs to arise, external influences must fall in with personal internal factors in a very definite way. The internal factor is the personal drive which must be present as a general trend and in a certain intensity in order for needs to become *specific*. If "thirst" were not a prime vital need of the individual, a special thirst for beer or wine, and also effects of excess, like dipsomania, would be inconceivable. If there were no inborn sex and love impulse, the need for specific forms of gratification, for refined means of excitation, and for perverse practices would never have been able to develop. However powerful they may be, external influences upon human needs are consequently able to operate only within the limits of preexisting general impulsive trends. *Thus it is quite as impossible to create from without needs out of nothing as it is to annihilate them.* External influences nevertheless impart to the generalized and indomitable trends of needs their *specific* direction toward definite objects and forms of gratification. They transform the direction of the needs, increase or obstruct their dynamic manifestation, and control their gratification by regulating the means of stimulation and the attainability of the end. Herein there is satisfactory scope for influencing human needs by educational, social and political means.

A specific need is the less subject to external influence the more intensively it is embedded in the basic drive and the more rigidly it is held to its specific form by habit, imitation, and inheritance.

Where a drive finds mental expression in several needs, no single one of them is so closely intertwined with the basic drive that it cannot be replaced or dislodged by another. Thus it is entirely possible that an *originally diffuse* sex drive may lead, conformably to external influences, to either homosexual or heterosexual needs and gratification. On the other hand, where the basic drive has discharged itself with full force *from the very outset* into a specific form of need, external coercion is brought about only with difficulty and then but superficially. Thus in a case of innate homosexuality threats of punishment and proscription by public opinion, while having some effect, will scarcely stamp out the need itself.

Fixation through habit is very strong in many cases of addiction to certain drugs. Often this particular mania has become rooted so deeply that weaning is accompanied by serious disturbances of emotional and bodily equilibrium.

If a specific need is denied satisfaction, it is not thereby extinguished; on the contrary, the impulsive force residing in it necessarily

seeks an outlet or a detour in terms of the (inescapable) basic drive. Ordinarily the closest possible resemblance to the original, but now throttled, special form is chosen. This is the "*principle of least need deflection.*"

Thus the convict, for whom sexual activity in the heterosexual form as heretofore is not possible, does not lose his sexual need, but frequently deflects its course to homosexuality or self-gratification.

There is a second principle of substitution which is far more prevalent when a need is throttled not from without, but through one's own voluntary decision; this is the *principle of contrast*. The reformed drunkard becomes a teetotaler, that is, he diverts the impulsive energy that was formerly devoted to the need, to the suppression of the need; and in his joy at victory over the craving he finds a substitute for the previous pleasure in fulfilling the need.¹

IV. INSTINCTS

I. INSTINCTS AS INSTRUMENTAL DISPOSITIONS

The concepts "drive" and "need" designate purposive or directional forces; these concepts in themselves assert nothing of the *means* leading to the goal. We even found that the purest form of impulsive expression consists in discharge without choice, so that there is no adaptation whatever of means to end.

At first this suggests that the use of appropriate means depends entirely on the empirical factor of learning and on the intellectual factor of deliberation.

But this supposition is altogether misleading. Certainly countless ways and means of gratifying needs must first be learned and practiced, that is, derived through experience. But this is not true of *all* of them; it becomes less true the further we proceed from particular specialized needs to the elementary basic needs; the latter not only acquire their *ends* from drives independent of experience, but get their *means* from original "instincts."

The concepts "drive" and "instinct" are thereby differentiated from each other as innate *directional* and *instrumental* dispositions respectively. The distinction, of course, is only conceptual; for an instinctive use of means is possible only where a directional set like a drive prevails. We therefore call *instinct* that kind of primordial *drive whose direction points not only to the final end, but also to the means by which this end is attained.*

In what mode are these "contingent ends," which we call *means*,

¹ The concept of "quasi-needs," introduced by Kurt Lewin, is to be discussed later (p. 420).

represented in *consciousness*? Never in the form of *ideas and thoughts* of the end. The instinctive nest-building of the bird is distinguished from the non-instinctive building of houses by man precisely by the fact that the bird has no previous total plan, no anticipation of the necessary individual acts, no idea of the building materials required at later stages, no judgment as to why certain particular steps taken are suitable and others unsuitable, etc. But when despite all this, the bird finds suitable materials at particular stages in nest-building, it can have a dull urge that is something like a feeling but is directed upon objects—that is, a *need*. This is settled only when a suitable straw or twig is found and utilized in the building project; the same is true of further contingent actions.

Thus while the bare, primitive drive is precipitated in a *single* need and impulse in the course of attaining the end, the realization of an instinct proceeds by a whole series of *contingent needs*, each of which on being fulfilled gives rise to another, all of them together bringing about the realization of the final end. Courses of action, more or less complicated, occur, which, unlike mere impulsive actions, do not swell and subside on the instant, but give continuity to the several episodes covering the wider range. This is shown in the nestbuilding of birds, their seasonal migrations, the preparatory activities of many insects for raising and feeding offspring yet unborn.

The existence of such highly organized and yet unconscious instinctive actions has always passed for one of the greatest mysteries of biology and psychology, and investigators have always striven for an explanation of instincts. But we must inquire whether and in what sense an “explanation” is necessary and possible. The surpassing mystery appeared to be the fact that in primitive stages of life (animals, infants, savages), actions are carried out which civilized, adult man, *in attaining analogous ends*, can realize only with the aid of consciousness; of experience, thought, will, prevision. If a human being wants to travel from Europe to Africa and back, he must consult a guidebook and a travel bureau, using much deliberation in preliminary arrangements; he must somehow anticipate and *survey* the undertaking in its *entirety*. But the stork conquers the same reaches of space and returns to its home nest without having at its disposal these technical and intellectual devices.

But is not this comparison a false one? To the man, the trip to Africa is only *one* among many possible journeys, and even this one journey may be carried out with the most varied modifications. For the stork, however, the flight to Africa is the only possible distance flight and one which has to be made at a definite time. For man the path and end of travel are alien to his every day life; for the stork

the event is *its own* flight, its path, its end, an organic part of its life. The instinctive action of animals is a perpetual *readaptation* to one ever-identical animal environment; the non-instinctive action of civilized man is a constantly shifting requirement of fitness to deal with an ever-changing, indefinite number of possibilities in a world of novelty. Thus only on a very superficial view could one speak of *analogous* actions in the two cases. Instinct belongs to the primal relationship of living beings to their world, and cannot therefore be "traced back" to more fundamental factors. The living being functions here with the same naturalness and fitness as under the processes of growth, metabolism, etc. Instinct differs from these purely biological processes only in that its ends are not uninterrupted but have certain *critical points*.

The above consideration naturally does not preclude attempts to analyze the various instinctive actions, and to determine their special components. For example, one very interesting problem concerns the *sensory* functions by whose aid birds of passage maintain their orientation during their flights and return flights. But it must not be supposed that assigning a definite sensory functional capacity "explains" the instinct. For it is not the function of an organ in itself, but the meaningful utilization of the function in service of the chain of needs, which constitutes the essential instinctive action. And this chain of needs, with its transformation into action, cannot be derived from anything else, but belongs to the innate make-up of the living being.

2. THE DEVELOPMENT AND FLEXIBILITY OF INSTINCTS

But this "innateness" must not be conceived in too rigid and fixed a manner since it involves motion and free play.

a. *The development of instincts.* To be innate does not mean to be ready to function at the outset. Since instinctive actions appear at a fixed time, it is not possible for them to function at once. The plainest illustration of this is the sex instinct, which matures only after a long time; other instincts too have their longer or shorter periods of latency. Instinctive actions may sometimes display a clearly recognizable *maturing*; they are nevertheless not to be regarded as simple products of learning. External influences may bring on some precocity, delay, and modification; but it is essentially a matter of the inner disposition becoming *ripe* for realization.

The difference between such "maturation" of instincts and learning through experience becomes plain when the child's learning to walk is compared with the adult's learning to ski. At a certain age every normal child starts making attempts to walk. Concentrating for a time a large part of his energy upon the task, the child is able,

in responding to the need for coördination, to regulate his balance, to make use of aids and supports, etc. Instinct is here effective, and there is rapid maturing to the point of complete achievement. Active assistance from adults simply increases the speed of progress. On the other hand, an adult learns to ski by sheer perseverance combined with varied experience, explicit directions, and instruction; and where these are not available, the accomplishment is not developed. Learning on the basis of experience may of course be considerably lightened by the coöperation of instincts that were perfected in other functional domains; thus instinctive control of total bodily balance, which was developed in the course of learning to walk, is used in learning to ski or to skate.

b. The flexibility of instincts. The preceding illustration also shows that "innateness" of instincts need not mean a rigid constancy in instinctive activity. Although instinctive action, being a *conserving* function, affords equivalent forms for reacting to phylogenetically and ontogenetically analogous conditions in the environment, it is no piece of machinery, compelled to operate through a strictly determined sequence of movements. In the biological realm there are never two situations that are completely identical, and on this account there cannot be two instinctive actions whose course is completely identical.

When two birds of the same species build their nests in different forests, or when the same bird builds its nest in two successive years, the process and the result of the nest-building will be in neither case exactly like that in the other, either in regard to the arrangement of the branches in which the nest is set, or with respect to the material whose availability is a result of weather, etc. Here instinct operates far more elastically than a machine; despite its conserving function it is able to achieve adaptation to the existing peculiarities of the situation. What remains identical is the basic drive and the final goal; but the manner in which the drive effectively utilizes the series of contingent needs allows a considerable margin of variation.

The elasticity of instinct is also important in *heredity*. It is certain that instincts are fixed legacies; yet inheritance depends not upon the transmission of definite unique series of movements, but upon the transmission of basic vital needs and of the capacity for realizing them through meaningful series of actions, within certain limits.

David Katz described the interesting case of a dog whose left legs were crushed by an automobile. Hardly had the wounds healed when the dog ran on his two right legs with astonishing skill, although the running instinct had to utilize a radical shift of equilibrium. Katz rightly concludes from this particular case that the vital need to run is stronger than the innate, four-legged running apparatus.

McDougall lays special stress upon the elasticity of instincts.¹ He discerns correctly in this phenomenon a final contravention of the "mechanistic reflex theory of instincts," which is advanced in many quarters by American investigators. According to this theory all instinctive action depends upon a fixed, innate system of associations between sensory and motor nerves. Such a system would have to respond in a stereotyped manner whenever sensory nerves were stimulated; but no such stereotyped mode exists.

McDougall illustrates the flexibility of instincts by the cell-building of the wasp. The particular acts of the wasp acquire their direction not from particular sensory stimuli but from the *goal*; the comb that is being constructed and its quota of small insects that will serve as food for the coming offspring. If the wasp is interfered with in its building, (by damaging the comb in the process of construction), it adopts, after a brief period of vacillating, those alterations of its habitual activity which are suggested by the situation; for instance, it will plaster with wax a hole bored in the comb, before proceeding with construction as usual.

McDougall designates this capacity for flexible utilization of instinct as "intelligence," and concludes that intelligence and instinct are combined in all animal behavior, though in varied proportions. The designation "intelligence" seems unapt to me, for it ascribes to animals a capacity to adapt to the particular situation *with conscious prevision of the goal*. There is no evidence whatever for this assumption. Not only stereotyped but also elastic instinctive activity occurs unconsciously.

3. INSTINCTS IN MAN

It was no accident that the preceding considerations and examples dealt primarily with animal instinct; for in animals, instinctive behavior is far more definite and obvious than it is in man. Our comparisons of animals building nests with man building houses and of the stork's migration with a human journey might even suggest to some that instinct in man is rendered superfluous by conscious thought and volition. But this danger was quickly offset through our examples for man (the walking of children, sexuality).

Consequently it is necessary to examine the psychology of instinct, hitherto pursued somewhat one-sidedly within animal biology, as it applies specifically to *man*.

If it were at all possible to set up quantitative comparisons in this field it could scarcely be asserted that instinct in man has less intensity and variety than in animals. The essential difference may be seen in the relation of instinctive action to acts of will. Although a primitive

¹ *The Energies of Men*, Chapter IV.

kind of willing occurs in animals, it is altogether the instrument of instinctive activity; it becomes effective when the direct realization of instinct strikes unaccustomed obstacles, and makes possible the attainment of the end by indirection. With man, on the contrary, activity that is based on thought and will is erected into an independent mode of action, instinct operating in connection with it partly as a hidden source of energy and guide, and partly as a counterpart of will. This explains why it is usually necessary in the case of man first to *abstract* the instinctive portion of action, and to delve into extremely primitive stages of human development (early childhood, savagery, lapses into abnormality) in order to light upon instincts having approximately the purity they have in animals. In this connection the *modifications of rigid inheritance* which we previously described as the developmental and flexible side of instincts are of far greater significance in man than in animals.

The new-born child is decidedly more *lacking* than the new-born puppy or the newly-hatched chick, in instincts that are ready to function at once. From an oat grain seen for the first time, the newly-hatched chick receives, by virtue of its nutritive instinct, a stimulus to turn toward it, and carries out the movement toward the goal by highly complicated muscular coördinations. The chick must walk, stretch out its bill, seize, and swallow. While the chick is able to do all these things immediately, the new-born child would starve if it had to move and to aim at the food, using its eyes in the process.

Only when the nipple is placed in its mouth does the instinctive action of sucking begin, though to be sure, in a highly perfected manner. After several days the child's earliest *turning instincts* develop; the head turns toward the light; through its warmth and odor the mother's breast instigates seeking movements of the child toward it, even before there is contact.

As another example, if a new-born puppy is placed on a table which is then tilted forward, it will try to keep from falling down the incline by crouching back, although it has never undergone the shock and hurt of falling. A corresponding protective instinct is completely lacking in new-born children; without making any counter movement they will fall. Later, of course, the human protective instinct also develops, but it is not so easy to identify as an instinct because it is then affected by experience and involved in acts of will. But occasionally there are later situations of danger in human life which either arise too suddenly to allow time for using earlier experience, deliberation, and choice, or which involve no sort of previous experience; then a defence reaction is brought about "instinctively." The unexpected roll of a ship immediately causes regulation of balance by walking with the legs spread.

This example likewise reveals the adaptability of human instincts; this they possess because they were not fixed at the outset as exclusive pathways. This freedom of movement makes them less discernible; they are not so much special formations as components of the highly organized structure of human action.

To choose a final example, let us consider the sex instinct. How much more monotonous, circumscribed, but also more accurately placed, in short, how much more "instinctive" are its manifestations in animals than in man! With unerring sureness each creature in the primeval forest discovers among the numberless animals of various species the mate of its own species; the preparatory actions (courting, fighting for the mate) are relatively brief, to a large extent fixed in form, and swiftly pass into final gratification of the need. With man on the contrary the seeking of a mate is attended with keen awareness, much hesitation, wavering decision, and misdirection; the preparations have resulted in highly perfected erotic culture; the manner of gratifying the need holds countless possibilities, side-tracks, and perversions—until it almost looks as if "instinct" were neither possible in nor necessary to this highly organized act.

But in reality it does play a part. The entire erotic and sexual manifestation of civilized man would burst like a soap bubble if the instinctive urge did not operate behind it all as a motive and directive force. In the process of maturing of the instinct there are to be sure periods of halting and uncertainty, times at which the domains of thought and will contradict the unconscious striving of instinct. If this condition becomes permanent, the individual has "lost his instinct," having had to purchase the rationalizing of his actions at the cost of a split in his personality, whose instinctive foundation cannot be abandoned with impunity. But in countless other instances, after many blocks in development and many detours, the instinct resumes its trend as an *unconscious selective principle*. Certain modes of behavior, after being sampled, are finally thrust aside through the instinctive feeling of their inappropriateness; and the ultimate life form chosen will be such as can be accredited by the instinct. Thus instinct is sufficiently flexible to be able to confirm not merely one single mode of behavior but several different possible modes.

What has been asserted of the sex instinct holds in substance for all other human instincts. They do not function "without experience" like many animal instincts; but they also cannot be replaced by experience. They impart to experience the flavor of genuineness or falseness; of merely transitory groping or ultimate acceptance. We are reminded again of the remarks concerning human *play* (see p. 358) made above. Play, especially the play of children, represents those phases of preparation and groping which instincts undergo long before

they are "due." Play behavior has so much larger a share in the life of people than of animals *because* human instincts *require* development to a far higher degree, and are also *capable* of this development.

Among present-day psychologists McDougall has dealt most penetratingly with the problem of instinct, and agreeing completely with our above assertions, has placed emphasis on the fact that both innate "propensity" and inborn "ability" (that is, directional and instrumental disposition) belong to instinct. While he formerly applied the concept of instinct to *man* and even proposed a system of human instincts, he has now revised this view and is inclined to restrict materially the concept of instinct. He calls it instinct when definite performances correspond *explicitly* to definite drives and do not occur in other circumstances (as with wasps, when the production and use of wax occurs *only* in serving the instinct of building for the offspring). But since with higher animals, especially man, the gratification of a need takes place with the aid of the most varied capabilities, and a particular capability is utilized in the service of the most varied needs, he now hesitates to designate this sort of behavior as instinctive.

This amendment does not seem to me adequate. For the essential distinguishing characteristic of instinct, which is its lack of intellectual anticipation, is thereby lost. To summarize what has been said above, in a different form, an instinctive action is a meaningfully directed action which is derived from innate needs ("propensities"), and which in attaining its end activates innate capabilities ("abilities") as required at the moment, without necessitating conscious prevision of the end or conscious choice, decision, and planning. But under this definition instinctive activity also plays a part in *human* actions.

Finally we may mention that in man too there are *typical differences*; in contrast to the individual who has "lost his instinct," mentioned above, is the "instinctive person." For the latter there is only a small measure of tension between conscious and unconscious guidance because the accuracy of the instinct is great and is not greatly encumbered with developmental barriers, detours, necessities for testing. Between the two extremes is the "disciplined" man, in whom the structure of voluntarily determined conduct is always ruled by the unconscious selective principle of instinct.

CHAPTER XXI

THE WILL

I. GENERAL REMARKS

I. THE CONCEPT OF WILL

For man, no pattern of life becomes so sharply salient against the background of personal activity, organizing itself into a specialized process, as the individual act of will. In this process the dynamic totality of the person is focussed into a compact act which disrupts the even tenor of events. But on the other hand, every act of will is deeply rooted in that activity which it appears to oppose; lines both manifest and submerged attach it to other levels.

Only by keeping this dual arrangement of the will within the person continually in view can access be gained to its true nature. It is utterly inadequate to state it all by the formula of contrast, to the effect that the will is opposed to impulse, inclination, and temper as an unyielding, inimical sovereign power; just as it is to state it all by the formula of unity, as if the will were merely sublimated instinct and a direct continuation of activity in the vital sphere. Will is both things at the same time, and consequently something altogether peculiar and novel,—and specifically *human*. (The germ of will in animals belongs essentially under the second formula.)

Definition: *Human will is a form of striving, fed from the depths of the needs, impelled and ordered by conscious anticipation of end and means, the operation of which is initiated by a particular personal act.*

In past centuries philosophy and psychology have employed the term *will* in very different senses. We give a few examples of these.

One very extensive usage simply identifies “will” with the impulsive force of *any* happening in the world; thus Schopenhauer ascribed all evidence of internal force, whether inorganic, organic, or mental, alike to the “will.” This kind of universalizing would make impossible the psychological and personalistic extraction of anything specifically in terms of will. Too broad again is that conception which is restricted to *psychical* activity, but which sets this up throughout its entire range as a process of will; according to this “voluntaristic” theory (Wundt) not only actual processes of striving but likewise all perceptual, ideational and thinking processes, are acts of will.

On the other hand, the narrowing down of the concept which proceeds

from *ethics* is not useful to psychology; thus Kant limits the concept solely to striving guided by *reason*: "Will is the faculty of proceeding in accordance with the notion of *laws*."

As long as the individual's striving sweeps on to fulfillment in a steady current, will is not present; the performing subject and the object dealt with are indistinguishable. To a newborn child the mother's breast is not an "object" nor is the urge to suck, "will." Only when the striving self is put into *opposition* to something else does this become an "object" and the self a being of will. Hence a gap or cleavage between the striving person and the result striven for is a prerequisite to willing; willing itself is the bridging of this gap. But since awareness also occurs wherever tension and conflict hold sway, the process of willing is precipitated in inner experience.

The *object* of striving enters consciousness as the *goal*. The goal may be conceived abstractly or imagined concretely; it may loom up as a blurred outline or with sharpest clarity; but it is represented in consciousness in some manner, else no willing is present.

In the state of willing the *subject* has a peculiar consciousness of self-activity, an enhanced inner experience of his own self as a being fit for the deed; the inner experience becomes attended peripherally by sensations of strain in the muscles ready to act. The acme, however, comes in the concentration, at a *definite* instant, of the experience of being able to act, into a direct experience of *acting*; "Now I will. . . ." This *onset*, which eludes closer introspection, is the core of every act of will; it is the point of departure for analyzing the structure of the act of will backward (to its motivation) and forward (to its execution).

The *bridge* between subject and object is established in consciousness through the experiencing of self-activity as *directed* toward the goal and as *instrumental* in attaining it. The two comprise a unity: the consciousness of the desired fulfillment and that of one's own capability. Both moments appear in all degrees of sharpness and clarity; neither can be entirely lacking.

2. ILLUSTRATIONS

In order to illustrate concretely the variety of acts of will and the gradations from primitive to ever higher forms, we here present a series of fictitious examples relating to a concrete activity, my work on this book. The theoretical discussion to follow will draw occasionally upon these examples.

a. One sheet of paper comes to the end in the middle of a sentence; I move it aside and continue writing on the sheet lying under it, commencing at the top and on the left. This manipulation of the sheets is an *involuntary* act, become reflex through habit.

b. While writing I come to a place where I should like to cite a book whose title escapes me. The thought is aroused, "the book is at such-and-such a place on the shelf." This thought impels me to get up from the desk, go to the book case, take out the book, and note down the title (*simple act of will*).

All the following acts of will are of a more *complex* nature.

c. As in instance b, I should like to get a book from the shelf. But this impulse is intercepted by another: I do not wish to interrupt the train of thought now proceeding; the thread would be lost if I lay down my pen for but an instant and leave my desk. But finally I decide to get the book, and I do so (*act of choice*).

d. I come to a point in my writing where the impartial presentation of my scientific views might displease certain narrow-minded readers and thereby injure the market for the book. On the other hand I am convinced that the scientific purpose of the book can be carried out only if I pay no heed to such points of view. In this dilemma, the thought "scientific probity and objectivity must not yield to any other purpose" is finally effective, and I act accordingly. Here the decision lies between a concrete situation and a general principle; in the end the principle is the effective motive to action (*called acting on principle*, and also "act of higher reason").

e. I pass on to a new chapter of the book. The topic, and consequently the general *aim* of the action now commencing, is fixed. But before I devote myself to its treatment I must make a *plan*, arrange things, exhaust alternatives, set up specific and general considerations. Thus all aspects of instances c and d are involved. Finally the *plan* is so far developed that I can commence work; action has its onset. Moreover, during the execution the plan is a guide, setting the incidental ends, the partial acts, glimpsing what has been done and also the next stage. The plan itself is thereby controlled, corrected, reformed, replaced by other plans; and the total course finally forms an hierarchical structure of acts of different magnitudes, which all fit into the scheme of the total action (*acting according to plan*).

3. PHYSICAL CHARACTERISTICS OF WILL¹

Viewed anatomically and physiologically, acts of will are possible only when a brain exists and is capable of functioning. From certain cortical centers there proceed physiological impulses which pass by devious routes through sub-cortical way-stations (medulla oblongata, spinal cord) to motor nerve endings whence they lead to definite muscular contractions. The movements thus produced differ from

¹ The significance of the body as the *goal* of certain acts of will is to be discussed later (p. 405).

those which are set off directly by sub-cortical centers without participation by the brain (reflex actions) in that they do not proceed along anatomically fixed (inherited or exercised) pathways. On the contrary, the result is coördinated movements, always new and different, which in their totality make possible a meaningful performance.¹

But it is not only the particular motor processes belonging immediately to the performance that are involved in an act of will. Rather the total physical state of the organism becomes altered because *the distribution of energy* takes on a concentrated instead of a diffuse arrangement. The energy-consuming activities which do not fall in line with the function to be executed become reduced so that the largest possible amount of energy is available for the particular action. Thus *inhibition* and *exertion* necessarily go together. Superfluous and diverging movements and sets are inhibited; the bodily region from which the action develops is thrown into readiness. As a matter of fact, it is a whole bodily *region* that is affected by inhibition and meaningful activity. Through the changed distribution of energy the organs of this region become drawn into the circle of graduated tension.

Thus the watchmaker, whose work on a chronometer requires nothing but delicate movements of the fingers, also throws his whole hands, forearms, upper arms, and shoulders into a state of tension, its intensity decreasing with increased distance from the fingers. In carrying out the act of will of mental concentration, not only the brain works, but forehead, eyebrows, posture of the head, etc., likewise reveal irradiations of tension.

4. PROSPECTIVE REFERENCE OF WILL

Essential to each voluntary action is a conscious reference to the future: a "prospection" or "anticipation." But before we are able to conceive the future reference of the will in particular we must consider more generally the rôle of future references in human life.

There are three spheres of connection of a present life process with the future as shown in Fig. 15. The widest sphere is occupied by references that are quite unconscious or only dimly felt, nevertheless giving goal-direction to the items involved. We have come across their like in the form of bound mnemonic after-effects, anticipatory instincts, preparatory practice in children's play.

In the second and third spheres the future is anticipated in more or less clear cognitive form (as image, thought etc.); but it is the third sphere only in which the prospection transcends the mere passive

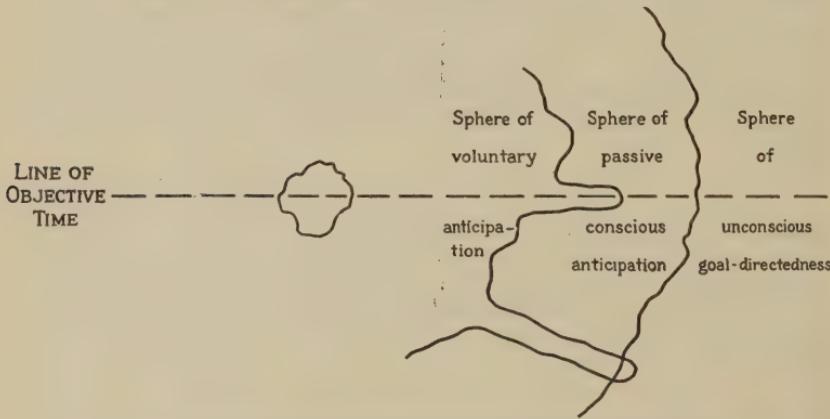
¹ The cerebral central station for the regulation of these meaningful bodily accomplishments is the top part of the brain. In certain diseases of this "center of action" there are curious errors of action. Hugo Liepmann first described this syndrome of "apraxia."

attitude of feeling and imagery and actively involves influencing of the future. This is the realm of *will*.

Important in this connection is the difference between two features of personal dimensionality previously discussed,¹ i.e., nearness to the person and distance from the person.

The *distant* future is for the most part withdrawn from consciousness. In so far as it registers in consciousness, its effects are peculiarly pallid, disconnected, and lacking in import. Thus while healthy young people possess the knowledge that their lives will some day end, it is altogether vague and superficial, does not penetrate to the deeper personal levels, and does not influence conduct. Many an improvident

PAST|PRESENT|FUTURE



The Temporal Regions of Goal-Directedness

FIG. 15

individual who knows that he will be penniless within a few weeks is little affected by the knowledge and even less influenced in his present willing and acting.

The future is *near* to the person only when it is experienced in its personal significance for the *present*. The individual may feel dependent on *it*, anticipating some possible fate to which he must resign himself²; then he lives within the second sphere of future reference. The third sphere is entered as soon as he experiences the future as depending on *him*, as the matter to which he himself gives form, as the possibilities which he himself transforms into reality. *This active, conscious, future reference* is the essential feature of the will. The

¹ Cf. p. 94.

² For details see the discussion of prospective feeling, pp. 555 ff.

objects of an act of will therefore never have "valence" alone but also possess "materiality."¹

The personally near region in which will operates prospectively is of course not to be described simply by objective measures of time. There are indeed paradoxical experiences; thus an examination that is to be taken in a month may be so "personally near" to one individual that he anticipates it in deliberate planning—while tomorrow's dinner is more remote personally and beyond the reach of any present act of will.

In general, however, the will masters longer periods of time the more highly the individual is organized. "Tomorrow" is vastly remote for animals and infants, whose acts of will cover only the few instants that immediately succeed the present. Savages and children of school age have future reference of will, but it is still very brief. Quite otherwise is the prospective will of adult civilized man. He provides and plans, for years on end; indeed, there are acts of will whose conscious future reference does not stop even at the limits of one's own life. Legacies, participation in transpersonal activities of the state, the society, can bear fruit only after the close of the individual's life.

This *temporal span of will*² is one of the most striking features of fully developed human personality. Out of the nebulous uncertainty and unpredictability of the future there emerges a more clearly outlined tendency amounting to the series of events which are the objects of voluntary purposes and plans. Even though it may turn out later that the future comes to pass quite otherwise than as anticipated by acts of will, it was nevertheless one's *own*. Thus the lengthened span of will of civilized man is not only an indication of higher intelligence; it also forms the basis for the responsibility that the individual has for organizing his own life and that of his descendants.

5. ALIEN REFERENCE AND SELF-REFERENCE OF ACTS OF WILL

The goal of an act of will is not always situated in the external world; it may have its seat within the person himself.

In the early stages of the will the distinction, of course, is not clear. When a six-months-old child commences to grab things, he carries out many distinct acts of will. But apparently no distinction is made between grabbing for a bell and grasping one hand with the other; the separation of the subject from his immediate surroundings is far too little advanced for the bell to be taken specifically as "alien" and "outside," and the hand specifically as "belonging to oneself."

a. But the distinction gradually develops, and the more primitive

¹ Cf. p. 388.

² The development of the prospective time span of will has its analogy in the retrospective time span of remembrance. This also increases with advancing levels of mental growth.

acts of will have an *alien* reference. Intended objects of this sort are either things (subject to technological, practical action), people (subject to educational, therapeutic, political action), or structures of values (subject to artistic, juridical, scientific, ethical, and religious action). Moreover, only because he is able to manage his own body voluntarily, can the individual carry out acts of will with an alien reference.

Is this last statement really universally true? Are there no acts of will with an alien reference that do *not* require some bodily medium between subject and object? Is there no "remote control" by sheer will power?

This is no place to settle the question of whether telekinesis *happens* ("remote control" by prayers for recovery and the like); the evidence available thus far does not permit of scientific decision. We shall be content to consider whether such acts of will with alien reference, *if* they occur, contradict our thesis. They do not do so. For whenever such occurrences are reported, the subject who wills them is always changed in his physical as well as his mental condition (trances, cataleptic rigidity), and it is not beyond conceivability to assume that these changed bodily states may have their effects on the external world, perhaps by means yet unknown to us, such as radiation and similar processes.

b. *Acts of will having self-reference* are acts whose *goal* is some change in the person of the one who wills. This self-determining activity can be directed primarily toward one's own *body*.

We observed above that acts of will having an alien reference are not possible without domination of one's own body. To be sure, these bodily movements need not themselves be the goals of will; if they became independent, they would under certain circumstances prevent the individual from reaching toward the external goal.

When I "want" to write a letter, my finger movements have to fall in with the desire; but the result is not specialized acts of will directed toward my writing movements. The latter are simply brought in as the means of carrying out an act of will with an outward reference. It is different in *learning* to write; there the purpose does not suffice to produce a certain letter as an external object; I must also make my own hand-posture, the amount of pressure to be used, etc., the objects of separate acts of will. To state it in generalized form, all voluntary learning of performances must proceed from acts of will with self-reference, which come gradually to be subordinated to the total objective purpose.

In other acts of will, one's own body, or rather certain of its functions and states, are the true object of willing, as in the case of all measures used in caring for the body and its health, of eating, of gymnastic and recreational exercise, etc. Here, reversing the relationship just

described, an act of will with alien reference may be placed in the service of one with self-reference; a child who is learning to clean his teeth must direct his will not only upon the cleaning but also upon the manipulation of a strange object, the toothbrush.

Remarkably varied are the kinds and degrees of *dominion of the will over one's own body*. The striped muscles, which are in direct connection with the central nervous system, are, to be sure, the ones chiefly affected by voluntary impulses. But we have already called attention (p. 401) to the graduated effects of will which affect whole regions of the body and ultimately the total organism. In consequence, remarkably great flexibility and variability is possible.

To superficial observation, bodily actions which can be influenced and which cannot be influenced, are plainly distinct. Movements of the hands can be effected voluntarily, but not the digestive activity of the stomach; the two eyes may be rolled about together, but not one eye by itself; breathing can be voluntarily slowed down, accelerated, and stopped within certain limits, but not the heartbeat.

As soon as one goes into detail, the scene changes. Exercises and athletic feats, the correction of faulty movements, practice in correct speech, the breaking of bad habits, breathing exercises;—all these and many other individual accomplishments consist primarily in bringing under voluntary control functions that were originally outside its scope. Later on, when the will has done its work of alteration, these functions may become as much a matter of course as involuntary activities. Acrobats and fakirs furnish astonishing proof that there are apparently no limits to the subjection of bodily functions to will.

c. Another kind of act of will having self-reference subserves *mental* rather than physical aims; this is the calling up of particular contents of consciousness. These are the true "internal" acts of will. For example, I cannot exactly recall a name, and make an effort to bring it back; I reflect upon a difficult passage in a foreign book, the meaning of which I want to comprehend; I strive to understand the true motives that led me to a certain action; I am in a perilous situation and try to suppress the anxiety that arises; during a psychological experiment in which I am the subject I direct my attention upon the experiences that are taking place.

As in the case of bodily movements, here too the limits of voluntary dominion can be shifted. In primitive stages internal acts of will are but little developed. One who wishes to influence his own inner experience must achieve a certain distance from it, and must be able to turn the voluntary set away at times from bodily and external goals, which are far easier to affect. This double demand is so difficult to meet that young children are unable to "put their minds on" a name that is forgotten for the moment, to ponder over a riddle that is not

extremely simple, to give introspective reports, etc. There are also many adults whose capacity for such voluntary acts is exceedingly small. Being entirely given over to contacts with the world, they lack spontaneous motives for making their own mental activities objects of will; and when there is some compulsion to do so, e.g., putting their minds on a name, some sort of external aid like repeating similar names is resorted to.

The act of will having self reference that is most highly developed is to be found when neither urgent bodily states nor conscious contents, but *dispositional* qualities of the person himself are objects of willing. It is not something about me but *I myself* that is to be altered through my own activity. The terms for this are self-cultivation, self-education, self-development, self-realization. The peculiarity of these acts of will is that while they commence at a definite time they have no definite term, but continue to affect the future course of personal life.¹

II. THE MOTIVATION OF THE WILL

No act of will appears from nowhere, but always has a preparatory period which runs its course within the person before it breaks forth in overt action. Those factors within the person that cause the eventual act of will are called the "motives" of the act of will. It is by means of motives that a particular act is attached to the totality of the person. It is therefore evident that the problem of motives is of great significance, not only for psychology, but for ethics, criminology, and the whole life-outlook as well.

Scientific usage compels restriction of the term "motive" to the internal causation of a single act (e.g., a very weighty resolve, a crime). On the other hand the concept "motive" must not be so narrowly construed as to take in only *conscious* phenomena. On the contrary, behind conscious incentives of will there may be others which, proceeding from the larger depths, carry the true forces that nurture the act of will. We distinguish these two kinds of motives, the manifest and the instigatory, as *pheno-motives* and *geno-motives*.

I. PHENO-MOTIVES

Let us at first limit ourselves to a description of motives that are accessible to *inner experience*.

A *pheno-motive* is an anticipatory idea of a goal antecedent to a voluntary action directed toward this goal.

Conscious anticipation of future possibilities does not always lead to the analogous activity; it may become lodged in the passive forms

¹ See pp. 440, 441.

of wishing, fearing, hoping, and expecting; even so-called "conflicts of motives" furnish no guarantee that an act of will will result. The number of instances in which such courses of inner experience become choked up or gain their end through merely becoming conscious (wish fantasy) is many times greater than that of those in which the playing with a future possibility turns, gradually or suddenly, into striving toward actualization. Thus only *when* an act of will has actually appeared can we designate the anticipation in consciousness as its "motive" (in this case as its "pheno-motive"), and the time during which it develops, as the *prophase*, of the act of will.

In a "simple" act of will (example *b*, p. 400), the prophase is used up by a single pheno-motive which is directly transformed into volitional impulse and execution. Several pheno-motives have a part in all "complex" acts of will (examples *c* to *e*), wherefore they require a prophase of greater stress before the onset of willing is brought about.

That a pheno-motive always involves *emotion* is the important discovery made by Hume, in contrast to the rationalistic conception according to which mere awareness of the end has the force of a motive. The individual may possess very clearly the theoretical conviction that from some point of view a future state is preferable to a present one; but a decisive act of will comes only when this insight also corresponds to some *need*. The conscious token of a need, however, is the ambivalent, or better, the *multivalent*, feeling of privation at the moment, its onward urge, and the pleasurable anticipation of the goal. The dynamic force of this burst of feeling may vary greatly, but it cannot be lacking to any conscious content that is to motivate will.

As to objective content, the pheno-motive to a simple act of will is always *concrete*. An action that is completely unique and individual must be entered upon here and now; the anticipated goal must likewise be unique and individual. This does not mean, to be sure, that the goal must be already conscious in a clearly shaped and elaborate form. On the contrary, various levels of concreteness may be conceived, from a colorful image of the desired state, with all details, to a poor schema lacking in distinct content.

Wherever a single pheno-motive can turn into action, independently and without complication, there is usually no occasion for a more intensive conscious portrayal; if I am hungry, the vague image of any bakeshop, indeed, the mere thought of the possibility of buying something, will suffice to bring about sudden willing and entrance into the next store.

It is otherwise when *several* pheno-motives hold the stage in the prophase. In that case there are various alternatives. A pheno-

motive that is at first vague (e.g., "I will not stay home tonight, but do something") may split up into various mutually exclusive motives: "Shall I go to the theatre?" "To the moving pictures?" "Visiting friends?" "Walking?" The need of coming to a decision leads to extensive concretizing, to the precise depicting of this or that goal and of the means necessary for attaining it, so that there occurs a vivid and colorful movement of concrete contents. The fluctuation of feeling is also vivid, for the needs that might be gratified by these various ends are of various kinds; in the above example the need for excitement (a murder picture) conflicts with the needs for recreation, for sociable chatting, for physical restoration.

A pheno-motive that is at first solitary may after a longer or shorter period of time bring out opposing motives which obstruct direct transformation into action. A member of a gang plans a crime with the rest. As long as he remains with them, only this motive alone exists for him; but when he gets off alone, thoughts of his dependents, his occupation, menacing danger, suddenly come over him and come into conflict with the primary motive. Finally the opposing motives are compacted into a general inhibiting force, so that the inner experience of conflict dwells on just two alternatives: "Shall I or shall I not?"

That such conflicts of motives may undergo considerable development at an extremely early age is shown by observations in child psychology. An example, published elsewhere, may be repeated.¹ A three year old boy had gone to the circus, but had to be taken out because of his excessive fright. When he was outside there began a struggle of motives; anxiety over himself, which had driven him out, came into conflict with other feelings that impelled him to go in, such as anxiety over his sister who had remained inside, intense interest, confidence in the protection of the police posted inside; finally this second group of motives won out.

Wherever the prophase concerns an *act of choice* as in the above example, we may speak of a "conflict" or "struggle" of motives. But this expression is only to be taken *metaphorically*; it does not fit the actual causation of the willing. Although the individual pheno-motives may achieve relative salience as aspects of consciousness and are evidently contradictory as to content, they must not be given the independent status of "forces" that can "struggle" with one another. It is on this very point that the views of elementaristic psychology led to serious consequences. Since individual pheno-motives were regarded as dynamic unities, the *person* was transformed into a passive thing that was pushed and pulled in various directions by these forces, as by a towline or balance, to move finally in the direc-

¹ *Psychology of Early Childhood*, p. 252.

tion of the strongest drag.¹ Any such conception forgets that the pheno-motives derive their true force from the geno-motives, which are rooted in the totality of the person.

To acts of choice belongs also our example, *d*, of "acting from principle" (p. 400), except that in the case of choice the pheno-motive that points the way becomes conscious in the form of an *abstract proposition*. At this point the close connection of acts of will with thinking becomes evident anew, for here there is a marked capacity for abstraction which is required in order to conceive universal principles of obligation.

We must, however, avoid a purely rationalistic conception of this "acting from principle," since the ability to think in abstract terms is a necessary but not a sufficient condition for it. The proposition must enter inner experience as a demand to be fulfilled by free decision; but *the demand and its fulfillment can never be derived from the thought of universal laws*; they are beyond pure theoretical thinking.² Stated in our terms, only a universal proposition whose fulfilment is a *need* can be effective as a principle of will. However far acting from principle may rise above these acts of choice, which are derived purely from concrete pheno-motives, unless this procedure is attached to needs and consequently to a variety of feelings, it cannot come to pass.

In the prophase of complex acts of will, however, prospective consciousness is concerned not alone with the goal but also with the possibility and the ways of reaching it. Internal tension is thereby considerably increased, for the suitability or unsuitability of certain means may produce new pheno-motives which come into conflict with the others. During the prophase of the act of choosing an occupation certain questions must be taken into consideration, such as whether the pay is enough, whether further qualifications must be met, etc. Before any decision there is frequently anticipation of the paths to be taken to the various ends, that is, hypothetical and optional plans; indeed, there is one type of person who devotes himself so completely to such projects that he never proceeds to initiate the true act of will toward this realization.³

2. GENO-MOTIVES AND PHENO-MOTIVES

a. Homogeneity of motives. The *experiencing* of motives, which alone has been discussed, offers no explanation as to why a motive does

¹ By a similar procedure the famous scholastic dilemma of "Buridan's ass" became possible. In it the poor beast must starve while standing between two equally large haystacks each of which is the same distance from him, because the attractions from right and left are equally strong and counteract each other.

² Cf. Kant's sharp separation of "practical reason" from "theoretical reason."

³ Cf. p. 424.

not remain a matter of feeling instead of affecting the will. The true motive force lying behind pheno-motives we call a *geno-motive*.

In will the immediate geno-motive is always a *need*. When a need is not actualized instantaneously by an impulsive action, it is precipitated in the form of conscious anticipation of the goal, i.e., in phenomotives. If e.g., the need for food, i.e., hunger, becomes effective as a genomotive but is not so pressing as to cause snatching any edible thing the individual has time to develop certain images of desirable foods, to select one consciously, and to consider the means of attaining it. This process of consciousness involves the pheno-motive to the final action of ordering a sandwich in the restaurant.

As the example shows, the *content* is a question of *determination*; the vague need is not merely translated into ideas and thoughts of the goal, but it is also made specific, and what was a dull urge becomes refined into a planwise choice of means.

At the time, however, a *reciprocal relation* between need and will is established, which extends far beyond the scope of any given act of will. The will's possibilities of foreseeing, choosing, planning, referring to temporally remote and intellectually abstract goals; these possibilities alter and refine human needs themselves; ultimately, in the face of this interweaving of deeper dynamic factors with complex currents of will, even the highest purposes; duties and ideals, and the realization of religious, aesthetic, and logical values, come within the scope of human *needs* and thereby contribute to the available genomotives serving new acts of will.

This reduction of geno-motives to needs, then, signifies not a sinking of will to the lower level of vital drives, but the reverse: an elevating of needs to the plane of intellect.

Of course there are many human needs that do not generally take the channel of the will for their fulfilment. For example, an intense need for sleep leads to falling asleep without recourse to voluntary effort, and even at times against one's will. Other vital needs (e.g., nutrition, change of position) can be satisfied with extremely simple acts of will. (This is true, to be sure, only in normal life situations; in times of famine the need for food, and in insomnia the need for sleep, necessitate very complicated acts of will in order to secure fulfilment.)

In contrast to these there are other needs whose goals are too remote and too complex to be attained directly; they can be fulfilled only because man is capable of willing. On the other hand, such actions are possible only because they are based on needs. The act of the martyr, who gladly sacrifices himself for his beliefs, receives its driving energy only from the strong need for uncompromising belief and eternal blessedness. This need however belongs not to the vital sphere of impulse but to the spiritual sphere of introception.

b. *Heterogeneity of motives.* In the instances discussed thus far geno-motives and pheno-motives were in *homogeneous* accord; the goal-set established in the geno-motive was retained by the shift to conscious pheno-motive, being thereby made determinate and explicit. But in other cases motivation undergoes a metamorphosis during this shift. Here too, to be sure, the act of will derives its driving force from the energy of the basic need; but the *content* of the motive, on becoming conscious, differs from the true incentive, which remains hidden.

This is the area which the schools of *depth psychology* have undertaken to explain. But our conception of the matter is far different from the theories of psychoanalysis and Individual Psychology. The following examples are purposely not taken from those complicated and largely abnormal situations with which these theories usually deal, but from every day happenings of a relatively simple kind.

(1) In a fit of stubbornness a child refuses to eat a dish that is ordinarily a favorite, giving as an excuse "it doesn't appeal to me," or "I'm not hungry." Let us assume that these are not lies but forthright expressions of what the child himself *believes* to be motives for refusal. Objectively the belief is false, for the actual geno-motive of the action is the need for self-assertion in the face of the external compulsion. From this need, again, proceeds the energy with which the child's will refuses the proffered food, but its content remains unconscious and is replaced in consciousness by quite different content.

(2) A married man is consumed with jealousy and hence seeks to keep his wife away from other men. He does not motivate his passing up of social events, preventing his wife's going out alone, arranging purely feminine contacts for his wife, etc. by his jealousy, *even in his own mind*, but on other grounds: domestic coziness is far nicer than sociability; he wants to save his wife the unpleasantness of travelling by herself; she needs the help of other housewives. On thinking it over he keeps discovering new grounds, and even displaces the moral significance of the motives by telling himself that his actions are brought about entirely by his interest in her welfare. Self-deception in regard to motives may be complete; we can also conceive of innumerable transitional forms between naïve belief in the "motive" and outright hypocrisy.

(3) We have previously described the ability to base acts of will on *principles*, as one of the most highly developed stages of human life. But principles themselves are very frequently utilized as mere pheno-motives for geno-motives of a quite different sort. Then the action appears to be sanctioned as a particular application of some general thesis, e.g., "Righteousness prevails over all else," but the application of the thesis is not so general as the principle itself. It

is no accident that in lawsuits the unreconciled procedures of both *parties* are justified by the principle of "law" as a pheno-motive, and not in retrospect alone but also before the action. Other motives, such as self-interest, revenge, special privilege, etc., which may have a part in, or indeed bring about, the process as authentic geno-motives, do not become conscious.

Consequently in all such instances the name *pheno-motive* would not only signify simply a motive which *appears in consciousness* (as contrasted with the geno-motive, which remains *unconscious*), but also a *spurious motive*¹ (as contrasted with the genuine, *actual* geno-motive). This is, in fact, the sole interpretation that psychoanalysis puts upon the relation of the two motives. This theory never wearies of representing hidden impulsions, which are ascribed almost exclusively to the domain of sex, as the only true and original ones, while viewing pheno-motives that differ in kind as "mere" blinds and surrogates. But this conception does no sort of justice to the great *positive* significance of pheno-motives.

c. *Further significance of pheno-motives.* Here we shall at first emphasize the *justificatory* function of pheno-motives. The purpose abiding in every act of will comprises both the objective goal and the acting subject. In the latter case it is a question of aligning the particular action meaningfully with the *self* as a total personality. Whatever I am to do voluntarily continues to belong to me and waits only upon resonance from without. Before being carried out, this reference of every act of will beyond the self must be *justified* in the consciousness of the one who wills.

"Justification" may be taken at first on an intellectual basis. Action without reasonable ground appears in such a low order of events that it cannot be considered valid. Moreover a dull feeling at least is present, showing that the action does not build up without cause out of nothing; the suspected basis of it, which cannot be directly expressed, is stated rationally by indirection. But justification in its other sense of vindication is more essential. The intended action must be able to hold good in the light of "self" and "world"; through it the self and one's relation to others and to objective values are asserted and confirmed. This function of acts of will is carried out by pheno-motives. For its fulfilment it is indifferent whether they are homogenous or heterogenous with respect to existing geno-motives; they provide that aspect of justification of acts of will in advance of action which is requisite under any circumstances.

The question is whether this component of an act of will can be called a "motive," that is, a *causal* factor; this question too is answered

¹ Both meanings of "pheno-" are expressed in German by the adjectives *erscheinend* and *scheinbar*.

affirmatively. For an action *occurs as an act of will* only when it can be justified to the actor and to the world through some conscious purpose.

But the personal significance of pheno-motives goes still further. On repetition of the acts of will to which they correspond, pheno-motives gradually become authentic geno-motives; i.e., they operate mnemically and take on the impulsive force of genuine needs. Here a second and contrary heterogeneity of motives is much in evidence. If the stubborn child of our first example had refused a certain dish several times with the justification, at first purely a pheno-motive, "it doesn't appeal to me," in the course of time there would have arisen an objective aversion to food (that is to say, a negative need). This aversion would become effective as a geno-motive with the previous falling away of the original geno-motive of stubbornness. Likewise the "principles" in the third example although at first subterfuges for the most part, might thrust their roots ever more deeply in the soil of the personality in the course of time and become effective on this basis as authentic geno-motives; indeed under certain circumstances they might even undergo that motivational exaggeration to be found in pedants and sticklers for principles.

Pheno-motives, then, must not be regarded as mere secondary appurtenances simply because some of them may have this quality when they first appear. Likewise true geno-motives must not be restricted to one or to some few groups of vital needs because these seem to predominate in early stages of the development of the will. *The variety of genuine geno-motives in human action is infinitely greater than the over-simplified theories of the depth psychologists will admit, for new geno-motives are continually arising from pheno-motives.*

d. The lines of thought hitherto taken sound a note of criticism against an *experimental method of investigating motives* that has recently been developed in psychology. By it, real acts of will are not utilized, but representations or even outright fictitious instances of acts of will are produced experimentally, perhaps by asking "Why must one not tell lies?" or "What would you do if you found some money when no one was looking?" It is evident that the replies to such questions (even when they are *bona fide*) would express simply the thoughts, or at best, the wishes, that are aroused in consciousness by the experimental situation. In reality it is uncertain whether these thoughts and wishes would have but the restricted force of pheno-motives when preceding an actual act of will, since a real situation might thrust quite different motivational contents into the foreground of consciousness; and the artificial set-up is even less likely to touch the true geno-motives. The subject might very possibly act from entirely different motives if he were *really* faced with a lie or with a

windfall, than he asserts with all sincerity during the experiment.

Nevertheless such experiments are not without value, provided they are not regarded as investigations of motives. They provide glimpses into the *capacity for moral judgment* of those tested. The appraisal of acts of will, one's own and those of others, depends in fact to a great extent upon the capacity to actualize possible motives in terms of thought.¹

III. COMPETENCE AND ATTEMPT

I. THE EXPERIENCE OF COMPETENCE

In former theories of the will the consciousness of being directed toward goals was so greatly emphasized that the consciousness of being equipped, the inner experience of competence, receded into the background. Yet it is numbered among the constituent items of every act of will, for only that purposive striving which is borne by a *belief*, whether vague or definite, in the ability to carry it through, can develop into willing.

We must distinguish, of course, between actual (personal) competence and the (psychological) "sense" or experience of competence. Imagine a completely crippled person who is incapable of lifting a finger in order to write. Such an individual might still "will" to write, provided he knew nothing of his disability. We are also told of war cripples that although lacking an arm, "will" in moments of forgetfulness to accomplish something with the missing arm. But if they are *aware* of the inability, willing is impossible. To be sure, the man who knows about his defect can have the *wish* (which cannot be fulfilled) to write; he can also will to learn to write with some other intact member; but neither case is the actual will to write. For there is no onset of willing, which is the central phenomenon of will.

Belief in one's competence need not always be present as an independent item of consciousness; indeed, in the simpler every day cases of willing it usually does not operate as a salient feature, but merely collaborates as a background attitude. If after taking a walk I "will" to proceed with the course of my day's work, the mental readiness for the act I am about to carry out is combined with my *power* to do it and the fulfilment of necessary conditions, mental vigor, rudimentary ideas, etc. so that I am "competent" to go to work.

The experience of competence is usually more clearly discernible in more distant aims and in more highly developed nexi of action.

¹ Hjalmar Sander gives a survey (with bibliography) of experimental methods for testing these so called *Gesinnungen* (normative convictions). See also Stern's and Wiegmann's *Methodensammlung*, p. 262.

Not only before and at the commencement of the act, but also at many points during its course, does the competence of the person who wills become *questionable* to him; he does not have merely a simple and naïve belief in his competence, but asks himself *Can I do it?* and the question involves both the purpose ("Can I will it?") and the control over the means ("Can I carry it through?").

This is illustrated by the desire to learn a trade. Genuine "willing" occurs only when the conviction is attained that the goal will be persistently upheld during the several years training period and when there is also the belief that the individual's *abilities* and competence, together with the available financial, technical, and other resources, can make success possible.

Thus a complete and serious act of will presupposes the subordination of a *positive* belief in one's competence to the goal of willing. If this relationship is disturbed, willing loses its *serious quality*. Disturbance may consist in either a weakening or an overpointing of the sense of competence.

2. THE UNDERRVALUING OF COMPETENCE

Since with more highly developed objectives the sense of competence is built up by *questions* that the individual who is about to will puts to himself and the world, considerable *intellect* is required. The individual who is uncertain of his competence must estimate the persevering force of his purpose and his personal powers; but he must also judge the conditions of the external situation, in order to see plainly whether or not he can attain his goal. Here again is one of the points at which we discern the close connection between *thinking and willing*.

Reflection upon one's competence may under certain circumstances make competence, and therewith will, uncertain, and ultimately disable it. Critical self-analysis and the thinking over of things always tend to emphasize especially the factors opposing the action—lack of ability, possibility of failure, external obstacles—; and very generally, a purely deliberative demeanor is in itself harmful to the activity of willing. Some people never achieve force of will or the execution of acts of will because of strong misgivings. They are "sicklied o'er with the pale cast of thought."¹

The conviction of incompetence does not always prevent action, but there is nevertheless no act of will. This appears very plainly in compulsions; the slave being flogged by the overseer tries to drag his heavy burden further although he knows that he can no longer do it. Much the same thing occurs, however, when more delicate impul-

¹ Von des Gedankens Blässe angekränkelt. (Schiller.)

sive forces are concerned. A candidate for an examination may acquire during his preparation a strong conviction that he is not "up" to the requirements of either the preparation or the test itself. In spite of this he goes on working, perhaps only because he is perseverating along the lines of his daily activity, perhaps so that others may not observe that he is doubtful of success; at any rate, he no longer has a true "will" to succeed in the examination.

It is otherwise when the question of one's competence is yet undecided; then, in connection with persisting activity as mentioned above, there is highly active behavior which even takes on the explicit quality of an act of will, but an act of will "with reservations." This is the "attempt."

3. ATTEMPTS

Every act of attempting has a dual objective: to attain the objective goal and to confirm the experience of competence. For example, when a riddle is proposed, one of the company may say at once "nothing simpler"—naïve sense of competence—proceeding with its solution upon the onset of will, and perhaps failing. Another, more cautious, says "I will try it"; the doubt of his competence does not cramp activity but gives the action the character of being provisional and subject to reconsideration. If the solution is not attained by the first course he hits upon, he gains the knowledge that the method was unsuitable and repeats the attempt by a different attack until he either finds the solution or comes to the conclusion that the riddle exceeds his "powers," wherefore he does not "want" to solve it. The dual behavior of renunciation and readiness for a new attack constitute the essence of the conscious act of attempting.

But there are also spurious acts of attempting, namely those which are experienced only in *retrospect* as fruitless approaches. The first individual, who with his brash conviction of competence rushes directly toward the goal, may say on failing, "I tried in vain." That is, on tasting the experience of incompetence, he lowers in retrospect the level of his act of will; if he undertakes again to solve the riddle he will perhaps be willing at the outset simply to "try" it.

Thus every attempt is of the nature of *Ernstspiel*. Equally serious are the aim and the willingness, in case of success, to acknowledge the action as a serious responsibility; but there is a more or less play-like reserve, a provisional, changeable quality in the endeavor, and a resultant definite refusal to take an inadequate or unsuccessful outcome of the endeavor seriously. ("It was only a stab at it.") There lurks in many inventors and likewise in many exact experimenters a manifest playfulness about groping around with ever different approaches, until some positive, serious result ensues.

4. THE OVERVALUING OF COMPETENCE

These examples point to the existence of acts of will whose objective goal is thrust back ever further by the subjective enjoyment of competence. The ability to attempt and to change the approaches toward a goal provides for a certain sense of sovereignty toward the world, which gradually becomes freer from "the true outcome," that is, from the goal. The "willing" of swindlers, gamblers, and adventurers is largely experimentation of this sort which has become an end in itself. The provisional character of endeavor reverts to complete irresponsibility; indifference toward objective goals makes all willing and hence life itself spurious and frivolous.

A more primitive form of overvalued competence is *stubbornness*. Stubborn conduct occurs when the individual consciously seeks and enjoys the *sheer fact that he is able to will*. This ability to will is manifested toward oneself and others by one's right to act for oneself and by the transcending of a passive and dependent condition. The stubborn child does not want anything in particular, the objective goal being incidental; he wants to *will* by negating another's will. Thus the three-year-old may petulantly refuse a dish that he would otherwise gladly accept, simply because he sees in its being offered him an encroachment upon his self-determination. Yet at bottom there is no action less independent than sheer opposition, for its objective goal has an *external reference*, but with a negative sign.¹

Acts of will in *athletics* disclose a peculiar duality of consciousness of goal and of competence. Here indeed objective results are striven for, such as the conquest of mountain peaks, the steeling of the body, the training of the will, discipline. But these results are at the same time striven for as *measurable accomplishments*, that is, as measures of one's own competence. The enjoyment of competence constantly seeks reassurance in the *degree* of competence through comparison with the competence of others as well as with one's own previous accomplishment. Even in athletics this over-valuation of competence, when it occurs, results in thrusting objective goals out of consciousness, so that for the alpinist-sportsman only the number of mountains conquered or an altitude previously attained by no one else constitutes the true measure of desire. Again we observe the *Ernstspiel* quality of action.

Actions whose primary aims bespeak wholly objective and serious intent may likewise take on a sporting quality if the sense of competence is given the impetus of rivalry, rewards, and the like. A goal that is not in itself very attractive frequently becomes evocative of will by being combined with sporting possibilities; thus the learning of the multiplication table in school, and piecework in factories.

¹ Cf. pp. 411 and 413.

CHAPTER XXII

THE COURSE OF VOLUNTARY BEHAVIOR

I. THE ONSET OF WILLING

Every true act of will has its onset in a specific action. Like other basic facts about the person, this onset cannot be exactly described and explained; it can simply be approached through certain delineations. Let us first consider organized acts of will that possess a regular prophase. In such cases *salience* against the prophase is essential to the onset. Although the prerequisites for willing may lie in the play of motives during the prophase, willing itself does not emerge smoothly from it, but comes forward with a rush. It is especially clear when the prophase has been drawn out by lengthy conflicts, deliberations, and doubts. These suddenly cease, something *new* appears, and the feeling of restlessness and uncertainty is thereby replaced by a feeling of finality which, despite any coexperienced activity, is vastly calming. This closure of preexisting struggles is called *decision*.

To the onset of will belongs an intense inner experience of *self-activity*: *I am the one who wills.* In no way else is the active totality of the personality concentrated into such a clear-cut inner experience as by the onset of will. *Volo, ergo sum.*

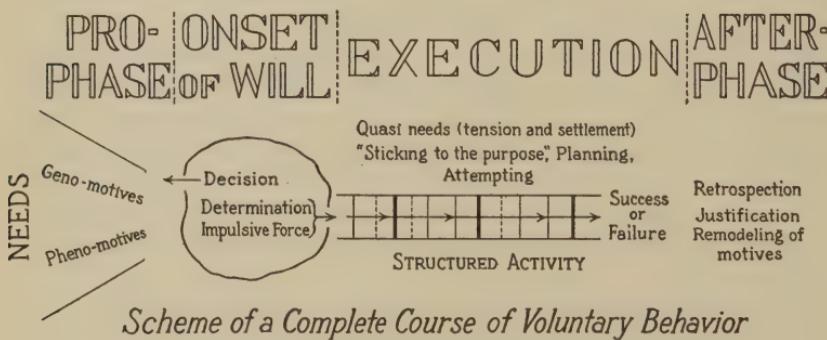


FIG. 16

But this sense of self-possession at the onset of willing is not restricted to the immediate present; it is focussed upon the future—what is about to happen is of *my doing*. This *prospective* side of the

onset of willing is called *determination*. The past is shut off, while what lies ahead is unlocked, through myself and my action. Any determination involves a kind of "eminent domain," a title to invade the world. However intense the experience of passive surrender to the world may have been during the prophase, at the instant of determination alien influences are superseded by one's own. Usually this feeling of one's own sovereignty does not last long because the world quickly reasserts its dominance; but it is indisputably present in the experience of determination.

Decision and determination impart to the awareness of willing (means and ends) quite another complexion than they possess in the prophase. The motive to which the decision is awarded rises in triumphant clarity from the confusion of conflicting motives. The instant they cease to present themselves as possible courses of will, the counter motives lose much of their tempting or terrifying powers. Means that seemed unusable during the first deliberations and paths that seemed closed, now that they have been determined upon take on a positive aspect. (This is indeed the meaning of the proverb "Where there's a will there's a way.")

After the onset of willing, what is purely mental (decision or determination) passes over to a psychophysical form; the body receives those innervations which initiate decisive action. These we call impulsive force.

To be sure, there are countless acts of will of a simpler kind; most every day actions that are willed at all belong to the type of example *b* on page 400. With them the prophase is lacking; as soon as the qualifying conscious content appears (wanting to take a book from the bookcase), the act of will that directs its realization is initiated. There is no special *act* of decision; but determination and impulsive force must operate in order to keep it from reverting to mere intramental wishes and ideas.

This may be clearly observed on getting up in the morning. There is no doubt about the *fact* that one has to get up (and consequently no question of making any decision); nevertheless, it often takes very powerful determination and impulsive force to reduce the knowledge of the necessity into actual rising.

II. THE EXECUTION OF WILLING

I. INTRODUCTORY REMARKS

Let us recall the examples of acts of will at various stages (pp. 399-400). The execution of a simple act of will (example *b*) is as forthright and uninvolved as its prophase; the single impulsive force

is adequate for bringing about those psychophysical sets and acts which are requisite in order to attain the goal.

Some complex acts of will are "complex" only in their prophase, their execution being contrived without complications (example *c*). But as soon as we ascend to the higher levels of willing it is the *execution* that assumes an elaborate temporal, factual, and dynamic structure (*Gestalt*). The individual portions of the act are related meaningfully to the goal, and this meaningful connection is so powerful that incidental actions that would tend away from the goal either do not get under way at all or else are suppressed as quickly as possible. In this property, acts of will closely resemble acts of thinking (see p. 287).

This feature of *appropriate adjustment* to the goal has been urged by investigators of will as a characteristic of acts of will; but it has been very differently stated according to the special psychological point of view. Thus Ach locates the true causal nature of this property in the idea of the goal, to which he ascribes a *determining tendency*, i.e., the function of evoking other mental contents. Lewin, however, emphasizes the "dominion" which the *individual* exercises over the act; he therefore contrasts "acts in the field," in which the individual gives way to the forces in the field, without dominating them ("impulsive tensions"), with "dominating" acts ("acts of will"). At bottom this is a personalistic conception, for "dominion" can only mean that the total person imposes his prospective striving and organized activity upon the particular physical and mental processes that run their course within him.

2. THE ENERGY FACTOR

The personal energy that is bound up with the activity of impulses and needs provides the source from which will is derived. This volitional utilization of energy is naturally the more possible the more it can draw upon energy that is in readiness, that is, upon genuine needs. But the process gives rise, at the instant of determination, to a *new* need, the need to prosecute the act to the point of the prospective end. Lewin designates this a "*quasi-need*."

The kind of quiescence at the moment of decision, to which we called attention, is of but brief duration; the *determination* to act sets up new tensions which keep the process of willing going until some kind of settlement is effected and the tensions are equalized.

This dynamic interplay of tensions and impulsions justifies reference to "needs" in this connection. *Quasi-needs* resemble genuine needs on a number of other counts. They impart to the things of the personal world more or less valence and materiality. They grant a margin of free play to the prosecution of actions (thus the design of posting a

letter can be discharged and effected by giving it to a friend to post instead of walking to the letter box as originally planned). They may use a substitute settlement: My intention to post a letter operates so that on leaving the house I think of the letter and put it in my pocket, the need-tension, however, being thereby resolved to the extent that the letter box does not possess sufficient valence and I forget to put the letter in it.¹

To be sure, "*quasi-needs*" also have features that clearly distinguish them from genuine needs. While the latter are persisting dispositions that continually emerge in acts of fulfilment, *quasi-needs* have a limited *term* of existence; they appear and disappear in a single act of will. Need-tension has its inception at the commencement of willing; on terminating the act the tension comes to a definite end; the act is "settled."

Two friends desire in a playful way to measure their powers; which can jump higher? Generally speaking, neither has a *need* to jump, and ordinarily jumping bars have no valence for them. But as soon as they decide to try it there arises in each a "*quasi-need*" to jump as high as he can. This need takes its impetus from other latent forces of the person, and the bar that has just been jumped over by the rival has considerable valence. When the game is ended both need and valence cease.

Moreover, as this example shows, the *content* of *quasi-needs* is a matter of indifference; the execution of what has been determined upon is independent of the desirability of the actual goal; only the interposed tension is to be resolved. In this way acts of will may take place that go against inclination; once in train, they have within themselves this urge toward their conclusion. Everybody has had experiences of this sort; a piece of work is begun unwillingly, and there arises the need to complete it. The longer the execution takes the more unendurable this need may become.

The purely dynamic side of willing provides a suitable object for *experimental* investigations, since it can be isolated artificially. Genuine acts of will, as occurring in real human life, are so strongly influenced by motivational tensions during the prophase, and so greatly dominated by deeply embedded geno-motives, that they cannot be experimented upon. The most fruitful and comprehensive experiments in recent times, those made by Kurt Lewin and his pupils, are therefore purposely restricted to the *formal problems* of volitional dynamics.²

Among the most important results of these experiments are the

¹ These illustrations are Lewin's.

² Lewin has recently elaborated these formal principles of mental dynamics into a system of topological and vector psychology. This was published after the completion of the present work, and cannot be discussed here.

findings on *interruptions* of willing, inasmuch as these most clearly reveal the tension-aspect of *quasi-needs*. (Ovsiankina. Zeigarnik.)

The subjects of the experiment were asked to carry out various actions successively; to make a design out of colored stones, to model an animal, to string beads, etc. Before one task was completed it was interrupted, and the next begun. Or else some apparently accidental interruption took place, such as the light going out suddenly, etc. The result was that at the termination of the interruption *a spontaneous return to the uncompleted task* frequently occurred. There was no external compulsion about this, nor even any encouragement, and the subject, moreover, was scarcely interested in the content of the task; nevertheless there was this spontaneous urge to *complete* it. Lewin correctly sees evidence in this that the undertaking of the task produced need-tension that lasted during the interruption and spontaneously impelled continuation and completion. There is a memory experiment along the same line; when the subject had carried out a lengthy series of acts part of which were completed and part of which were interrupted before completion, later questioning revealed that the completed acts were largely forgotten while the uncompleted acts were well recalled. They had remained *mentally uncompleted*.

3. CONSCIOUSNESS AND UNAWARENESS

Acts of will requiring organized execution are never accompanied in entirety by the consciousness of willing.

When I "will" to leave my quarters in the city in order to do an errand, the goal (a purchase) is the conscious pheno-motive of my action during the onset of willing and perhaps in the few minutes that follow it. But if I am well under way my consciousness may be quite otherwise occupied; nevertheless I will take the right street car and get off at the right stop, etc. Only after I enter the store does my intention to make a purchase, which has "subconsciously" guided me there, become fully conscious.

The original awareness of the goal of volitional impulses is thus precipitated in the form of *sets* which, so long as they are able to operate without hindrance, do not require consciousness. But they are ready to break immediately into consciousness whenever the situation demands it. Whatever is achieved on the basis of such sets is, despite any directedness in terms of future, non-voluntary; conscious choice and decision are lacking.

From the point of view of economy of energy this fact is of the greatest significance. *Willing uses up energy*; and if the individual had constantly to keep "willing" while carrying out an act of will, his limited amount of energy would soon be exhausted. But willing, in this respect, resembles thinking; full consciousness is necessary only at critical points in the process, where inhibitions occur and

where decisions must be recast; for the most part the action can run its course along channels laid down by habit or instinct and guided by set.

This accounts for the difficulty and effort involved in executing actions of the sort that deviate from the ordinary *at every step* and can therefore not be guaranteed by the set, with the result that an alert consciousness of willing is constantly necessary. One may here recall the scout who moves about in unknown enemy terrain, the forger who must give the right twist to every letter, the immigrant who has slight mastery of the language of his new country and who in expressing and recounting anything must first shift over from the mother tongue to the foreign language.

But even these cases come under the law that certain domains of action escape the volitional consciousness, and that as fatigue increases, these relaxations of will increase. The individual who attempts to disguise his handwriting is a concrete example of this. Even when he tries hard to copy the general features of another's handwriting, the initial letters, the down-strokes, the intervening, apparently incidental parts of the writing, such as word endings, free strokes, dots over *i*'s, etc. evade will and may become the means of betraying the writer. Likewise, disguised writing at the end of a lengthy letter does not succeed as well as at the beginning, because of fatigue.

4. PURPOSE

The determination, at first momentary, that is involved in the onset of willing must be *maintained* during the extended span of execution in order to guide further steps as soon as consciousness of the action occurs. A stabilized determination of this kind is called a *purpose*. However lively a given determination may be at the moment, it may soon pass off, but a purpose operates in the background or foreground as long as the willing process lasts; during this time it forms an integral part of the person's life. (Criminology is therefore right in stressing the question whether a criminal act was committed on purpose.)

But a purpose, too, may become weak before the goal is attained. Distant goals demand "long-term will-power"¹ which is not always at hand. Sometimes the attainment of the goal is taken too lightly at the instant of determination, and one's power overestimated; sometimes new interests and thus new goals intrude. In such cases of weakening of purpose, various possibilities occur. Either the action stops uncompleted, the scarcely begun enterprise being dropped. Or the execution must recommence through revival of the impulsive

¹ *Kraft des langen Willens.* (Nietzsche.)

forces, due in part to longer preparatory deliberations which closely resemble the original prophase; the result of this is fruitless repetition of mental processes that should have been concluded by the original decision. Or else a certain "saturation" attends the exhaustion of purpose, precluding resumption of the same intention; a different outlet is sought in terms of which the previously executed portions of the action can be salvaged, but with a different continuation than was originally planned.

There are also positive conditions that unleash new impulsive forces of will in the midst of execution. We mentioned above that any execution has *critical points* at which the automatic set for a goal of willing is interrupted by conscious deliberation. If such self-reflection reveals that the goal is not attainable in the manner desired, or that its meaning has been changed by a changed situation, it may be consciously replaced by a different goal, which is made the objective for further action through a new impulse. The new purpose need not simply replace the old; it may subsist on the force and momentum of the basic impulse, which becomes redirected and adapted to the new situation by a new onset of will.

The *flexibility* of will necessary for this in no way contradicts the strength of will. On the contrary, rigid clinging to the original impulse even when this has meanwhile lost its meaning, may be a sign of weakness. An individual who so behaves subsists on the previous power of determination, and does not risk new expenditure of energy for the altered determination ("wilfulness").

5. PLANNING

The carrying through of a determination requires not only a prospective approach to the goal, but also the ways and means to it. This preoccupation of consciousness with the implements for attaining the goal is "planning."

a. *The structure of planning.* Planning may have its inception in the prophase; thus one may "plan" a crime before deciding whether or not one is even going to commit it. In case the determination to do so occurs, part of the preparatory work is thereby anticipated. But there are also people who like to build castles in the air through very elaborate plans but never try to transfer them into reality by voluntary actions. This more or less fictitious planning is not to be compared with that which commences *after* the onset of will. For then the action, and consequently the ways to actualize it, are taken *seriously*.

In terms of inner experience, the conscious representation of a plan is always incomplete. No one is able, on setting a remote goal, to determine in advance every step, every word, every trick. On

the contrary, each plan is *schematic in form*; it anticipates certain prominent features of the action in simplified form; it ordains the succession of the incidental acts and the super- and subordination of the items; it takes account of the suitability and availability of the means; it also considers obstacles and upsets and measures for surmounting them. All this takes place within a certain margin of flexibility.

The structure of prevision in planning is not usually outlined in equal detail for all stages of the action. A detailed course is ordinarily plotted in advance for only the phases of action nearest the present; for later steps the schema becomes vaguer and more sketchily filled in, but it is thereby made more open, i.e., more adaptable to situations that cannot be previsioned. As the process advances the individual subjects to continued planning the phases of action that still remain; for the schema, being poor in content, must either be replaced by one more specific, or altered as a result of changing circumstances. Thus in extended courses of action, planning and its execution are constantly being changed.

But planning is not merely a linear extension into the future; it also takes on an *hierarchical organization*, and it is this alone which makes a higher form of willing possible. The total end of the total action, as conceived in the purpose, furnishes by its vagueness the generalized upper level of this hierarchy; to it are subordinated in the planning the means necessary for its attainment; every means however that is not present in completion at the outset, but must first be prepared or created, becomes itself a goal of willing. *Psychologically means and ends are not clearly separate in planning*; that which is the means to a remoter, superordinate end is also the end for an immediate act of will; and there are many degrees of this. From the hierarchical organization of the plan there thus develops the *hierarchical structure of the execution of will*.

A farmer wishes to move into the wild country, and plans the building of a new house. He sketches a drawing of the house in a crude and inexact way, finds a location, considers that he must clear it and that he must fell trees for a house (a first-order end); he needs tools that he has to buy in the next city (a second-order end); he must borrow money to pay for the tools (third order), etc. But during the task of raising the money, which may entirely absorb his consciousness altogether for a long time, the superordinate purpose is normally not lost; it works in the background as the motive for a set and is ready to return to consciousness when necessary in order to prevent the action from disintegrating.

It will be noticed that the hierarchy includes impulses and purposes; the one main total resolve "I will build a house here," while remain-

ing potentially in effect, requires a large number of incidental impulses, all the way down to impulses for simple acts of will, like "now I will get the axe." Here again is revealed the remarkable flexibility of will; the general trend of the total purpose does not choke off the incidental decisions and determinations in the course of action, but maintains for them the freedom demanded by the actual situation.

b. Types of methodicalness. The ability and tendency to organize voluntary actions in a planwise, i.e., methodical way varies greatly among individuals and constitutes an important trait of personality worthy the study of characterologists. The extreme cases comprise attitudes in which the plan plays the tyrant and others in which life goes on almost without effective planning.

On reaching the determination to take a trip, X plans it down to the last detail. He knows before leaving home where he will stop every day, what sights he will see, what trains and boats he will take, how much money he can spend on each stage of the trip, and when and where he may expect definite remittances. For this man the true act of *will* is completed in the one determination and in the planning itself. From then on he is a slave to his rigid plan, which allows no room for any new impulses. He "wills" no longer but is "willed upon" by the product of his own willing. There are no decisions to make, but only routes that must be followed; there is no leeway for adjusting to unforeseen situations but rather the eventual disruption of the plan.

Y, on the contrary, who is a casual globetrotter, has a vague idea of what he wants to see and experience; his prevision includes simply regions of the earth he will visit, the amount of money available, and the approximate length of the trip. For the rest he is carried along by one special impulse after another, and from one incidental action to another each of which constitutes an independent process of willing. No firm resolve prevents his hitting upon notions and determinations; but there is likewise no ruling aim to give the trip as a whole a meaning that comprehensively covers all details. In extreme cases this attitude may lead to the loss of inner continuity of life.

III. THE AFTER-PHASE

When a particular act of will has been executed, its function is not discharged as regards either the doer or the surrounding world.

I. MOTIVATION AFTER ACTION

Just as action springs from the totality of the person's striving, it subsides into this totality and persists as a portion of the meaningful personal past. On completing any important action, the individual becomes another person. He must now deal with this event which,

born of him and executed by him, is irrevocably a part of him. Such is the consciousness of *responsibility*, which is psychologically a highly developed phenomenon. It consists not only of feelings in retrospect (satisfaction or dissatisfaction with the completed action), but also of a feeling of an augmented or diminished self, and of a new volitional impulse: to fit the particular action intelligibly into the total course of life, to acknowledge "*I was the one who willed and did it.*"¹

Consciousness of responsibility is greater when the person, in his motivation, purpose, and execution, has contrived to preserve his whole nature throughout the particular action.

This applies particularly to the *motivation*, which now appears in a somewhat different light. For one's consciousness of the motive *after* the action cannot be identified with the motive *before* the action. To be sure, on looking backward the individual thinks he *remembers* the motives that impelled him to act. But if "recollection" is never a bald copy of the past,² certainly one's recollection of one's own motivation is not.³

Before acting, the motives retained some freedom of movement, wavering between unconscious geno-motives and conscious pheno-motives; they have had a chance to remain mere wishes, flirting with the notion of action, or to become regular volitional motives. *After* the completed act of will, the situation is quite different. The stark reality of an action that can never be revoked must become embedded in the person's total existence so as to illuminate his entire motivation.

At this point a *search for the motives of the action* frequently commences *in retrospect*. Where its course was attended by a relatively small amount of consciousness, that is, where the pheno-motives lagged far behind the geno-motives, the first experience after the action is often surprise and failure to understand oneself. This condition can become unendurable, not only because one must make some accounting to others, but also because the action itself must be acknowledged as one's own. It must be owned to or rejected. Owned to or rejected—for even when an act is regretted, repented of, and abhorred in retrospect, insight into the motive is demanded so as to permit inner adjustment to it and future control of the impulse. In retrospect, motives take on a stronger degree of awareness and a greater fixity and specificity than they possessed before the act. A special attempt is made to achieve as much awareness as possible of the geno-motive and thereby to rationalize the apparent irra-

¹ Compare the analogous formula on p. 418.

² See p. 255.

³ We shall not consider conscious falsification of motives; our discussion is restricted to motives that are really *believed in*.

tionality of the action. Those motivational components which on the other hand evade this attempt become virtually non-existent; the motivational process is simplified to a marked degree.

We again encounter an heterogeneity of motives. Conscious self-reflection indulged in by the individual when writing diaries, while composing his autobiography, or during confession, is rarely confined to an objective recital of a course of action, but brings up motives. If he does not do this spontaneously the questions of the confessor soon bring out the psychological presumption for the action. In such cases, *suggestion* plays a considerable part. For people who are not generally accustomed to accounting for the more delicate shadings of their interior lives, the suggestion of a *possible* motive may establish the conviction that this motive was at the bottom of the action. The altering of motives that then results is primarily a matter of prettifying them, which is readily comprehensible considering the justificatory nature of the process. Thus flight prompted by panic or cowardice may be interpreted (by the perpetrator himself) as a ruse designed to promote future triumph; altruistic or social reasons are traced out for an extremely selfish act. Every conceivable switching of motives (and there is no enormity that cannot be legitimized in retrospect on idealistic grounds), occurs in sincere self-justification, in order to protect or enhance the self. It likewise occurs in the border region between make-believe and reality, between hypocrisy and self-deception.

But the reverse is also possible; motives may be altered in retrospect in a bad sense. Thus some vague wish that has merely flitted through consciousness before the action may be misinterpreted after the act as a decisive motive of willing; or even when no objective act resulted, it can be made into an act of will, as a so-called "sinful thought." And even motives quite foreign to the prophase of the act may be fabricated and credited in retrospect; there are people who after acting unselfishly, worry over the possibility of some hidden selfish motive having moved them, and who finally become convinced of this.

This depreciation of motives in retrospect is naturally not directly reducible to the need for justification. But it is related to it indirectly through the very fact that the doer now feels superior by contrast through his insight into and his repentance for his prior state of imperfection.

The vast significance of motivation after acting may be illustrated by two specific examples.

a. The *prisoner under examination* who does not deny committing the act of which he is accused is frequently in doubt about the motives that impelled him to commit it. His compulsory solitude, lasting a

week or a month, encourages him to keep turning over in his mind the statements he will make at the time of his trial. While the conscious invention of utterly false motives may play a large part in this, sincere attempts to discover the motives must not be too little credited, especially with non-habitual offenders.

A young man has set fire to a barn. "What really made me commit arson?" He racks his brain.

A teacher is arrested for indecent advances to a girl pupil, and keeps turning over the question: "Did the bodily contact proceed simply from innocent comradely feeling, as it obviously seemed to do at the time, or was there some admixture of lascivious interest, such as I am accused of?"

Sometimes one can read from the statements and memoranda of such prisoners how the picture of the critical situation keeps becoming enriched, particularized and crystallized, in connection with the accompanying conscious processes; motives mentioned in the beginning as mere possibilities, perhaps even as conscious fabrications, may gradually become firmly believed.

In other cases there is a chaotic confusion of thought as to the motive, and it is plain that at times an assertion and its retraction may alternate without one or the other necessarily being a conscious falsehood.

b. The *neurotic* who undergoes treatment by a psychotherapist is put into a condition in which he must explain in retrospect the motives of his actions and modes of conduct. As to the mere practical effect of the cure it does not matter whether the motives raised into the patient's consciousness by the psychoanalyst in retrospect were *actually* the true geno-motives of the previous behavior; for the *belief* that the patient adopts as to his motives may have a therapeutic effect independently of its truth. But from the point of view of psychological theory it is necessary to see through and combat the erroneous assumption that the retrospective motive must be identical with the prospective one. This notion overlooks the fact that a backward view *must* give a different picture than a forward urge. This is true of volitional processes belonging to the recent past; it is far more true of those that are remote. When an adult attempts to reconstruct the motives that lay at the bottom of his behavior as a child, far more fabrication of new motives than recollection of old ones takes place.

2. THE JUDGING OF MOTIVES TO ACTION

"Looking into the heart" of one's neighbor is properly one of the most important aids in the practical psychology of life; and it must often be employed after the commission of a deed in order to learn

its motivation. Father confessors of all kinds have been in all ages searchers for motives in retrospect. The educator can successfully combat unworthy modes of behavior only when he is able to comprehend their mental roots and to make them understandable to the culprits. And in modern criminology it is properly deemed a great advance that attempts are being made to investigate and appraise inner motivation. What are the implements and the obstacles in making such interpretations?

One source of information is provided by the suspect's own statements in regard to his motives. To be sure, what he says is colored by the desire to produce a definite effect in the hearer. But these fabrications are only partly due to conscious lying; to a great extent the subject himself believes more or less sincerely in his retrospect motivations. Other factors are the inability of the subject to force the finer shadings of his motives as experienced into the rigid forms of language and the limited capacity of the judge for grasping their significance.

Thus it happens that the observer overestimates unduly the most superficial and blatant pheno-motives and fails to interpret the geno-motives attached to deeper levels. On the other hand the judge, as a bystander, is sometimes better able than the subject himself to gain insight into the true motivation of a completed act. For he is not under the necessity of justifying it at all costs, which is a need that, as we saw, is certain to warp the subject's account. And if the judge is a trained psychologist, he does not have a naïve belief in the "correctness" of the pheno-motive that comes nearest to hand; on the contrary, he knows that one must attempt to delve into the deeper layers, which may escape the subject. Finally, a few people possess that innate intuition which can supplement or even replace the interpreting effort with "pre-interpretative understanding."¹

The hazard of establishing motives primarily or solely on the basis of manifest pheno-motives may be disclosed by two examples.

a. The *diaries of adolescents* are sometimes heavily laden with reviews of acts of will. Even trivial concerns (e.g., little misunderstandings with some friend) are placed under the psychological microscope by adolescents in order to gain knowledge of the obscure fabric of motives. And as with a real microscope, there is not only magnification and coarsening, but also the addition to the image of specks of dust that are not part of the object. What is down in black and white in the diary, while informative of the mental states of the author at the moment of writing, does not provide an adequate copy of the prophase of the act of will. The psychologist must shrewdly

¹ See p. 53.

reinterpret, tone down, and delete items in order to get closer to the actual geno-motives. Much that was written apparently in deep earnest is simply an outbreak of *Ernstspiel*.¹

b. The question of the motives to *suicide* is particularly perplexing. People attempt to establish these motives from the events preceding the act, from farewell notes, and (in cases of unsuccessful attempts) from the statements made in retrospect by the would-be suicides. The pheno-motives established in this way have previously been accepted rather uncritically; suicides have even been classified statistically according to motives, such as percentage due to love affairs, business failures, grief, or to poor marks in school.

Such an approach is particularly inadequate from the personalistic point of view. A single crucial event, or a transient pheno-motive that crowds into the consciousness of someone in despair, appears to be only the more or less accidental occasion, the true geno-motives having their probable source in quite different, deeper regions, of the personality.²

¹ On the motivation of adolescent diaries, see especially the work of W. Stern, *Anfänge der Reifezeit*, Charlotte Bühler, Bernfeld, und Kerschbaum.

² This topic was very recently treated by D. R. Löwenberg, Achille-Delmas, and von Peller.

CHAPTER XXIII

DISPOSITIONS OF WILL. CHARACTER

I. SETTING-OF-WILL AND CONVICTION

I. SETTING-OF-WILL

In discussing motives we repeatedly reached a boundary that must now be crossed. A motive, whether it appears consciously as a pheno-motive or operates unconsciously as a geno-motive, is only the causal factor of a particular act of will. But even geno-motives point beyond themselves to another factor. They arise from needs, which have a more lasting existence though in dispositional form, prior and subsequent to particular voluntary acts. In them there dwells a readiness and a dynamic tension without which the sudden outbreak into action would not be possible.

We thus reveal a prerequisite of acts of will that is more closely attached to the total person than is the motivation of particular actions. This we call the "setting-of-will"; it is that *relatively permanent* state of a person which disposes him toward acts of will of a definite character. The more decided and positive such a setting-of-will, the more responsible it is for particular acts of will; and the less in consequence is the importance of the momentary motive. A relatively simple example is offered by childish obstinacy. During what is often called the "period of stubbornness" the child of from three to four years maintains an "obstinate" *setting*;—he is constantly set to offer resistance to external influences and demands simply because they come from without. The most trivial impulsion is therefore sufficient to elicit an immediate act of obstinacy. Another example is the soldier in battle. With him too all individual actions grow out of the general disposition of will that has taken on its generic character under military training and the warlike atmosphere. In the immediate manifestation of this mental complexion a definite act may occur, such as the killing of a man, without any drastic conflict of motives becoming perceptible that would proceed from such a deed under other circumstances.

Both examples, purposely a little extreme in choice, at once reveal two opposed origins of lasting settings-of-will. The obstinate setting results chiefly from *internal* conditions of development; when this

developmental phase passes, the child ceases to be obstinate although the external influences which incited the rebellion need not have altered. The soldier's setting arises essentially from the *external* influences of his military education and the overpowering situation; the same individual may possess an entirely different setting-of-will before and afterwards. But even in these extreme instances neither the internal nor the external factor is ever *exclusively* operative; on the contrary, convergence of both factors holds unconditionally and universally in the production of lasting settings-of-will.

Let us take as a third example two individuals of the same age, X and Y, who for some reason or other have become segregated with criminals and must remain in that milieu for a considerable time. Both are under the common influence of the constant environmental setting that impinges upon them from every quarter, of the specific criminal atmosphere. Nevertheless the two may evolve very different settings-of-will in consequence of their inner differences. X, the more easily influenced, who perhaps has inferior equipment to begin with, will to a great extent take over the prevailing setting-of-will; Y, by virtue of greater independence or inner aversion, will resist it. This example affords us insight of fundamental importance.

If we consider the *internal* conditions which produce the settings-of-will of X and Y, we conclude that while certain vital factors (phase of development, mental and constitutional make-up) participate for *both*, it is for Y alone that something else is added. This is the conscious *decision*, perhaps arrived at by difficult struggle, not to be carried away and perverted by the environmental influences. Out of this grows a particular onset of will, i.e., the *determination* to achieve self-mastery and resistance.

X on the other hand shows an automatic shifting from an impulsive state, through convergence with environmental influences, into a permanent form of will. This is doubtless the more primitive way in which settings-of-will arise—for animals it is the only way. For human beings, and for them alone, there is also the other form: the production of a *permanent setting-of-will* through some *decisive act* of will. In no way is the peculiar total structure of human personality more impressively revealed than through this correspondence.

Naturally the spontaneous act of will through which the individual seeks to establish a more or less permanent setting of will implies no sheer novelty, no birth out of nothingness; on the contrary it is born out of the whole content of the person, which at this point is condensed for the time being into a unity. In the act, to be sure, past and present (i.e., heredity, experience and milieu) also play a part, but the act is more than the mere product of convergence of these extra-personal factors; it is made *free* by the additional factor

in this immediate outpouring of the person himself. For "freedom" is not the lack of causation, but causation by the self-determination of the person at a given time.¹

2. CONVICTION²

Although it is the true nature of a setting-of-will to issue into *acts* of will, there is still another destination purely within *mind* itself. This precipitate of a setting-of-will is a *normative conviction*. Its relation to the setting-of-will is similar to that of a pheno-motive to a decisive act of will; in his moral convictions the person *reflects* and justifies his setting-of-will to himself and to others. For many settings-of-will, especially those arising automatically from habit or outside pressure, there is no need for justification; consequently for these a special experience of conviction becomes salient to a weak degree or not at all. Recurrence of "conviction" as such is always a sign that the setting-of-will is constrained and open to question; it is the pitting of this setting-of-will against others in the same person or other individuals. Thus for the primitive, whose settings-of-will are self-evident, there are scarcely ever conscious "convictions," e.g., concerning his attitude toward the tribe or the religious cult. Differentiated culture, on the other hand, presents to the individual numerous values that cannot be reconciled, and compels the conscious clarification and justification of the predominant tendencies toward certain values if these are to be retained as components of will. In consequence there develop the "convictions" that are of value to the individual and society; normative convictions concerning family, state, race, and humanity; religious, artistic, economic convictions, etc.

Since a conviction is a pheno-motive that has become permanent, its significance for the person is similar. Conviction, though reflecting a dispositional setting-of-will in consciousness does not always reflect this in an adequate way. Thus alongside of the *genuine* convictions there are also *non-genuine* convictions (based on self-deception) and *insincere* convictions (which aim at the deceiving of others). Finally there is also *exaggeration* of conviction, in which the purely experiential and expressive attitude toward values is viewed as a substitute for the real setting-of-will. Many people, firmly convinced of their religious, patriotic, or moral intentions, and who feel impelled constantly to reiterate them, thereby exhaust themselves and dissipate the energy that ought to be devoted to

¹ On the metaphysics and ethics of the concept of freedom cf. *Wertphilosophie*, pp. 418 ff.

² In German, *Gesinnung*. There is no English word covering precisely the meaning of the German term.

actions corresponding to the convictions. *Those who are loudest in proclaiming their convictions often have the weakest wills.*¹

Settings-of-will, though lasting, are of limited duration. In contradistinction to single acts of will they form the longer lived dispositional foundation; but the persistence of this does not coincide with the person's span of existence. Settings-of-will have points of beginning and cessation; they develop through the phases of their rise, intensification, culmination, ebb, and fall, at times even in periodic waves. They are thus dependent upon *changeable* conditions, particularly the conditions of vital development and the personal situation. The characteristic setting-of-will of the period of prepuberty is suspended when puberty itself sets in, as is that of the soldier when he returns to his peacetime occupation. There are also transitional and hybrid settings-of-will; a person who retires at an early age lives and acts with his vocational setting-of-will, but this soon begins to be peculiarly lacking in content, thereby presaging the new setting-of-will of leisure.

Settings-of-will, to be sure, oppose a unified principle to sporadic actions, but are themselves only phases and contributory phenomena in contrast with the totality of the person. They are rooted ultimately in some *unitary, personal setting-of-will* that possesses internal cohesion and a developed total organization. This is "character."

II. THE THEORY OF CHARACTER

The concept of character had a curious fate in the psychology of the past century. For the classical discipline, committed to elementarism, it was more a nuisance than a problem. Bahnsen, who as early as 1867 attempted to create an independent science of "characterology," was practically ignored. In consequence concern with the concept was left for a long period to popular psychology and amateur efforts; nevertheless some decades ago a new scientific characterology began to develop which has gradually acquired closer relations with psychology (cf. p. 30).

At the present time, to be sure, special difficulties stand in the way of a scientific treatment of the problem of character.

(1) The problem is bound up very intimately with *values*, with ethical and metaphysical concerns; as a result it is lacking in objectivity. Very frequently character as it "ought" to be, or as one hopes to contrive to influence it, is not clearly distinguished from character as it actually *is*, the latter alone being a psychological problem. Any condemnatory prejudice or criticism is capable of

¹ Lessing's character Nathan suggests to the templar that "devout enthusiasm comes easier than good deeds" (*Andächtig Schwärmen leichter als gut Handeln*).

obscuring a factual view; thus no one who starts with *a priori* theses that human nature is inherently bad (or good) is qualified to be a scientific characterologist.

(2) The *practical* requirements of character analysis are extremely prejudicial to the theoretical outlook. The general public for whom such analyses are supplied is not interested in precise scientific statements; it demands the listing of the most simple features, and above all, reassurance of one's self-assertion.

(3) Considering the problem scientifically it is very difficult to bring *totality* and *analysis* into the right relations with each other. It is with this point that our own consideration must begin.

As has already been mentioned, the concept "character" has meaning only as a totality concept. It designates the make-up that the person possesses in his *totality*, but considers this totality from one definite standpoint only, that is, the predisposition to acts of *will*. The circumstance that it is possible to speak intelligibly of changes and cleavages of character in no way controverts the totality; for change and cleavage imply a unity. This unity is of course the *unitas multiplex* that we accepted as the general characteristic of the person. It is therefore essential that this unitary character include abundant settings-of-will, which appear both simultaneously and in the successive stages of life.

To comprehend and hold fast in theoretical consideration such an *unitas multiplex* is evidently a task difficult to accomplish. In the problem of character the difficulty has often been avoided by assigning the two features to two kinds or modes of character. The unalterable, indivisible unitary core thereupon becomes the "intelligible character"; the "empirical character" on the contrary is variously directed and stratified, subject to change with time, and subject to influencing by experience.¹ Let us attempt to set forth the real motives behind this dualism, and to reinterpret it according to personalistics. Reconsidered empirically in the form of plainly circumscribed qualities the will-complexion of an individual is doubtless *not* unalterable. Yet neither can it be derived solely from the inner being of the individual, but is shaped by the combined action of earlier experience and the personal situation at the present time. It is the person *as exposed to the world* whose picture we encounter in the empirical character. But it must not be forgotten that "openness to the world" is itself an essential feature of the person,² so that what transpires within him under the influence of the "world" must not be contrasted with some primordial, "true" character as alien,

¹ Kant and Schopenhauer emphasized this dualism above all else. More recently Pfänder separated "basic character" and "empirical character."

² See p. 70.

not genuine, counterfeit, second-rate. On the contrary the purely inward portion of character at no time and in no way exists in isolation; it is simply that dispositional potency and tendency which offers a wide scope for patterning and rendering concrete the bearing-of-will. The *unitary nature* of this inner entelechy does not consist in the possession of a fixed stock of inflexible traits, but solely in imparting an ultimate *meaning* to the total process of characterial patterning, and an hierarchical *total structure* to the qualities of will that coexist at a given time.

It would be wholly absurd to look upon this total disposition while in that state of extreme inertness and formlessness which obtains before there has been any experience, as with newborn children, as the true "basic character," and to regard everything that emerges from it through commerce with the world as *solely* empirical character. This would be permissible only if "experience" were taken to be an impersonal accidental factor. In reality each individual has but *one* character, developed by the interplay of internally conditioned striving with the actualizing factors of the personal world.

To be sure, there are stratification and structure in the character which impart to its individual components various degrees of embeddedness or salience. In every character there are consequently features which are deeper or more superficial, more central or peripheral, ruling or subservient, stable or labile; and what is crucial to the *nature* of character is not so much definite features in definite degrees of intensity, but the manner in which the qualities just indicated are incorporated in the unity of the structure, or properly speaking, the manner in which they assume their relative weight and rank order by virtue of this unification.

Unitas and *multiplicitas* are thus mutually conditioned. And as we did before with the one-sided *unitas*-tendency we must now oppose the excessive *multiplicitas*-notion under which the empirical demonstration of coexisting features or successive phases is regarded as the complete comprehension of character. The danger that characterology may taper off into psychological elementarism at this point, that is, fall back into a kind of "faculty" theory, is very great precisely when the investigation of character is approached through the exact methods of experimentation or interpretation of expression. For the scientific urge to analyze and the logical urge to demarcate fixed traits lead to a *list* of the "traits" being regarded as a "character analysis." In reality the proper task of the characterologist only begins at this point.¹ The enumeration must be transformed into

¹ As such a *beginning* a list of character traits may have a considerable instrumental importance. Cf. Franziska Baumgarten's booklet *Die Charaktereigenschaften*, and the comprehensive dictionary of personality traits compiled by Gordon W. Allport and Henry S. Odberg.

an actual joint survey, every item on the list becoming a personal component of this properly focussed total picture. Real understanding is not possible without an incessant, elastic *shifting* of the view.¹

For that matter, a single empirically discovered character trait requires a *threefold* examination; as to its intrinsic nature, as to its comparative distribution, and as to its personal scope or significance. (1) The intrinsic nature of a character trait, i.e., the readiness for acts of will of a definite kind and direction, may be grasped in its essentials by description. (2) Determination of comparative distribution leads to assigning the character trait to a place in a scale or typology so that its qualifications for the solving of super-individual problems becomes manifest. (3) Personal significance designates the scope of the character trait within the total structure of the dynamic personality.

Let us take as an example a character trait as popularly described: carelessness in money matters. (1) This quality of a given individual, X, may be depicted *intrinsically* by setting forth in detail his modes of behavior in every day and unusual situations that are representative of X's attitude toward money. (2) If this quality in X is *compared* with the corresponding modes of behavior of individuals A,B,C, etc. it is theoretically possible to place X with reference to a type or a point on the scale of carefulness, and practically, to evaluate his degree of qualification for some specific occupational activity (e.g., that of cashier). (3) But the true *characterological* significance of the trait becomes evident only when we investigate its rôle in the total scheme of X's character. For instance, if the personal quality of carelessness about money prevails over all other traits, it can stamp the individual as a whole as a gentleman of leisure, a wastrel, an imposter. On the other hand the same trait in Y, while manifest to the same or a greater degree when regarded comparatively, may be wholly secondary in its personal significance because the character of Y is centered about a trend that has little to do with the ability to manage money (as artistic or religious attitudes).

It will be perceived from this in how restricted a sense the determination of "traits" in isolation is allowable, even for comparative purposes. The more the trait with respect to which several individuals are compared involves the *whole man*, the less adequate it is to test a single trait as such and to assign it to type or scale; the need for including its *personal accent* in the character analysis is all the greater. At the present time practical testing, handwriting analysis in characterology, etc., are for the most part still far removed from this objective.

¹ Important progress toward this goal is made in G. Allport's *Personality*. The author demonstrates the consistency of the trait theory with the doctrine of the unity of the individual. Publication while the present book was in press forbids discussion in the text.

But where the characterologist is confronted with the task of making an inclusive character analysis of a person the need at once arises for considering any *inventory of traits* that may be discovered in the individual as *raw material* out of which the delineation must be constructed. The investigator must satisfy himself in the case of each individual as to the central and deeply located features that emerge from the total make-up of that individual, and as to how the stratification and structuration of the character, and hence the significance of all the traits in particular, develop from this particular starting point. This structuring and organizing activity on the part of the characterologist must not, however, become oversimplified in terms merely of "core" and "shell."

In order to distinguish the concept of "character" plainly from other generic concepts of human personality, such as "temperament," "naturelle," "constitution," its relationship to the activity of *will* must furnish throughout the chief approach. *Character* is the total make-up of the individual in terms of *readiness and predisposition for acts of will*, but more specifically, in so far as this is manifested and confirmed by *actual behavior*. Character is therefore not a purely psychological, but a personal, psychophysically neutral, affair. It is not covered by the fact that the inner attitude of normative "conviction" has become fixed, but includes the disposition to *overt behavior*, which is manifested in voluntary actions. This gives a new twist to the relationship between "character" and "world." Not only is character influenced and shaped by the world, but it is the lasting basis for the way in which the person acts in influencing and shaping the world.

This essential connection of character with *willing* now enables us to systematize the varied aspects of character qualities. We may classify them according to three features that every act of will involves: goal-directedness, dynamics, structure.

III. A CLASSIFICATION OF CHARACTER TRAITS AND TYPES

I. "TELIC" TRAITS AND TYPES¹

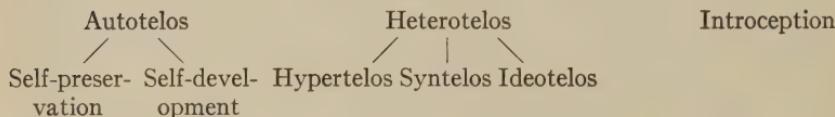
a. *The person's system of purposes.* In the life of every individual there is a variegated cluster of purposes that have lasting significance and may consequently become permanent goals of the will. At the *starting point* in the analysis of human character, above all in popular character reading, it is these persistent goals of the individual that come earliest to light. On this account we meet with especial frequency goal-directed character traits like acquisitiveness, pride of family, piety, love of truth, etc.

¹ The word "telic" is derived from the Greek word *τέλος* signifying end or purpose.

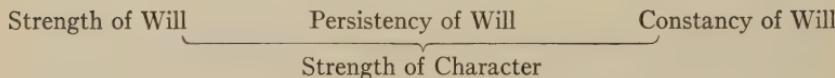
A scientific characterology, dissatisfied with these results of casual analysis, is constrained to assimilate the special domains which may become lasting objectives of the will to the total system of personal aims. Such a system has been proposed by me previously in another place¹ and it is in the main to this that we here refer.

ASPECTS OF CHARACTER

I. Telic Aspects



II. Dynamic Aspects



III. Structural Aspects



The system of purposes is erected upon the original person-world relation, and involves the duality of domains of one's goals: one's own self and the outside world with its objective values and spheres. In so far as fixed settings-of-will relate to the former or the latter domain, we may speak respectively of "autotelic" and "heterotelic" character traits.

Within the autotelic dispositions the articulation progresses toward self-preservation and self-development. It is toward *self-preservation* that the tendencies of preservation and of adaptation, of self-protection and defence are directed; toward *self-development* are directed the tendencies to enhance one's importance, to acquire power, and to organize the self. This scale of aims relating to the self also represents a series of increasing intensity of voluntary interest and thereby an increasingly close relationship to character in the true sense. For while the first-named tendencies can be fulfilled for the most part through purely biological operations of an automatic kind, and require actual determinations in but a few special cases, the last-named tendencies must first be actualized in conscious acts of will before becoming settings-of-will and ultimately, lasting components of the character. The tendency to *organize the self*² operates especially

¹ *Die menschliche Persönlichkeit*, Chap. I.

² *Selbstgestaltung*.

by combining all other autotelic tendencies, and first makes possible that which we call "character" in the specifically human sense. In animals there are likewise lasting tendencies of an autotelic kind, that are directed toward security, defence, and aggression. But these are confined essentially to the sphere of instinct; their incorporation into genuine acts of will is so weak that it must suffice to speak of the *naturelle* of animals, not of their "character." Man alone is capable of arranging all the strivings related to the self under the *Leitmotiv* of a generalized undertaking, namely *constant labor with himself*, and thus to interfere with the development of his own character through decisive acts of will. In this specific sense "character" is that quality of a man's make-up that, however greatly it may be conditioned by predisposition and environment, is nevertheless at the same time his own monumental achievement.

The *heterotelic* character traits may be classified according to the three kinds of desirable aims belonging to the world *outside* of the individual. This external world of value consists of super-ordinate regions of existence to which the individual feels obligated as a member ("hypertelos"), also of other individuals who receive recognition and deliberate consideration as centers of significance for the self ("syntelos"), and finally of abstract values which in the guise of ideas, ideals, and principles, are not only sought after but impress themselves upon the will in a normative way ("ideotelos").

Concerning the first two classes it is important to stress their divergence though they are often fused together under the heading of "altruism." An attitude that is adjusted to a *super-personal* structure, such as a people or nation, bears a different stamp from one that refers familiarly to a particular fellow-creature; similarly, the sense of family is not identical with love for individual members of the family. Indeed, there are even contradictions; burning patriotism may coexist with a very feeble will in regard to the individual fate of a particular fellow-being. Another example is that of the person who is ready to devote his energies to the larger aims of humanity and who often lacks active sympathy for needy relations or friends.

There are hypertelos and syntelos in simple forms among animals; here, however, they are realized essentially through mere instinctive dynamics, so that on this score it again seems improper to describe as "character" traits animal tendencies to form "herd societies" or to nurse and defend the young.

The third class of outside aims ("ideotelos"), i.e., ideals and principles, exists exclusively for human beings. Abstract thinking, which has the power to throw demands into universal "norms," becomes

not merely a tool of individual acts of will but a device for coining the lasting will-quality of the person. Thus the idea of justice, for instance, may become a norm that is constantly operative behind the scene of action, while the "sense of justice" accordingly becomes a character trait. The same characterological fixation is possible for the abstract idea of duty of the categorical imperative, for devotion to the idea of freedom, etc.

In effect, a single character trait of an autotelic or heterotelic nature that involves a partial purpose becomes comprehensible only when its place and function in the total personal system of aims is made known; consequently bare "analysis" must be augmented by reference to the totality. It is possible to achieve this *within* both classes. Within the autotelic class quite different character structures result accordingly as the tendency to preserve the self unchanged or the tendency toward evolutionary self-organization is dominant. In the heterotelic sphere there are the varieties of character, already mentioned, which are conditioned by the attitude toward the superordinate society or toward one's neighbor in the concrete. There is a functional correspondence for ideotelos; the individual who makes of external goals, preferably in the form of abstract ideals and principles, the motives of the will, has a wholly different character structure from one whose will is oriented toward living fellow-beings and communities.

But beyond these part-structures there extends the total personal structure, which is produced by the *incorporation of self-regarding goals and outside goals*. We arrive at the real totality of the character only when we know in what way the permanent tendencies of the individual which are directed upon outside goals become embodied in his self-development. As *introduction* this process of incorporation forms a basic category of the personalistic theory. Just as it was elsewhere made the leading principle of ethics¹ it will here serve characterology in a similar capacity.

The person-world relation thereby takes on another dimension. Not only is the person able to exist only within his personal world, the while receiving influences from it and exercising an effect upon it; in addition the "world" is to him a sum total of *objective values to be realized*;—his very self is a *value* to be shaped. Both must interact if the person is to actualize the significance he attaches to the world. Where this introceptive process has acquired such stability that single acts of will proceed from it by necessity, it is there that we have "character" in its fully matured form.

In the same connection we also come upon characterological *individuation*. Each individual being the center of *his* personal world,

¹ See my *Wertphilosophie*.

the domains of value that challenge his will are likewise ranged about him in a different manner than for any other individual. Moreover, each individual selects from this influential world those items which he incorporates so intimately that they become components of the self and hence factors in his self-organization. This is precisely the way in which an *hierarchical structure of goals and norms*, the most individual peculiarity of each person, is formed from these settings of will directed toward other people and family, race and nation, humanity and divinity, ideals and principles.

The stability of the character is consequently evinced not so much in rigid modes of behavior with respect to some particular partial aim, as in the ranking as superior and inferior of aims within that total purpose which Aristotle described by the term "entelechy." *Character is the entelechy of the willing personality.*

b. *Telic types of character.* Despite all individuality it is nevertheless possible to erect certain typical delineations of the purposive pattern, in short, "telic" character types. From the relationship between autotelic and heterotelic predispositions there necessarily result three types of character, the autistic, the heteristic, and the introspective.

Those characters are *autistic* in whose structure autotelic character traits predominate. To the autistic individual, he himself is chiefly the goal of his acts of will. It may be that he seeks as an "individualist" to emphasize his own nature in contrast with others; or that as a "subjectivist" he takes in and treats things primarily from the point of view of what they purport and signify to him personally; or that as an "egoist" he utilizes extraneous purposes as means for gratifying his own aims.

In contrast with the autistic character one may call that character *heteristic* which bears the stamp of heterotelic character traits. Where the orientation toward other people, society, abstract ideals, is predominant, personal self-organization may lose out. Instead of being individualized, the person becomes a typical example of the group; self-analysis is replaced by objective performance; in particular cases the necessity for action is not geared to the unique quality of the personal situation, and principles, in all their lifeless generality, are erected into rules of conduct. Finally, the heteristic character may go so far as to sacrifice itself altruistically to the well-being and needs of others by spending itself utterly to the point of renouncing the self ("selflessness").

The division of people into types directed inwardly or outwardly is common in various modern psychologies. Some decades ago I distinguished the "objective" and "subjective" types¹; more recently Jung's

¹ In my *Psychologie der individuellen Differenzen*, 1900.

type designations "introverted" and "extraverted" have come into use. To be sure, these names are not focussed exclusively upon *character*, applying rather to comprehensive attitudes, directions of interest, etc.

The Kretschmerian opposites "schizothyme—cyclothyme" also involve internal reference or openness to the world, but the essential feature of this typology is not so much the pursuit of goals as the structuration of character. This will be discussed below.

The term "autistic" is taken from psychiatry, where it is applied to an abnormal withdrawal into oneself. Yet it may have extensive application for normal character. To my knowledge the opposite "heteristic" has not been used before.

These extreme forms of character are of course only limiting cases; no one can be predisposed exclusively toward goals confined to self or toward external goals. The typology suggested above signifies merely a *predominance* of the one tendency or the other. Since this is the case we must insert an *intermediate type* in which autotelos and heterotelos no longer serve as extremes inasmuch as they form an introceptive fusion. For the true *introceptive character*, service of family, country, or humanity would not mean turning one's back on one's individual self, for the self finds realization in such service. It is the same with ideotelic trends; the introceptive individual, to be sure, has principles of action and follows them; but he is not a slave to them. Instead he vitalizes them and makes them concrete by arranging them in accordance with and by subordinating them to the organizational requirements of the self and the concrete demands of the situation.

The concept of "introceptive character" represents an ideal type for which there is no complete correspondence in reality. For each individual there can exist only a small selection of objective aims that he is able to intercept; within this range his character is actually so unified that it would be meaningless to inquire whether a given action were motivated primarily by egoism or altruism. But this core is surrounded by other regions of value for which complete interception does not succeed; these induce more autotelic or more heterotelic modes of behavior that may solidify into character traits.

In this connection the *unitas multiplex* and personal contact with the world again take a hand; while the character never breaks up into parts it has different *perspectives* corresponding to those activities which sponsor investigation of the individual's character. It is really an empty abstraction to suppose it possible to judge the "absolute" character of any given individual. It is absolutely essential for the practical character analyst to take the "perspective of character" into consideration. The picture of a given character looks different from the point of view of family life than from that of oc-

cipation or public and political activities. Not only does it look different, but it *is* a different picture, because at this point different structural components of the character receive the chief emphasis. Again we are brought up against a certain elasticity of character that diverges from the conception of a rigid and self-contained "basic character" quite as much as it does from that of fixed and autonomous characterial qualities. Strong self-interest in business life, selflessness in family relations, and introceptive fusion of the aims of the commonwealth with personal self-stylizing—these three character traits may well be present in one and the same individual without being contradictory and without menacing the unitary nature of the character. The latter simply takes on more tensions and dimensions, and in consequence becomes more versatile in its contacts with the various areas of the personal world.

This means that methodologically the correlation of *symptoms* from which a character is deduced must be made dependent for the time being upon the perspectives under which the analysis proceeds. For example, if a graphologist derives generalized characteristics like "trustworthiness," "pedantry," "carelessness about money," etc., from his analysis of handwriting, this does not prove that under the special perspective of occupational qualification these traits play an important rôle. And conversely in giving a *marriage* rating he has no right to draw immediate conclusions as to qualification or disqualification for married life from certain character traits that may show up in the occupational perspective. Here we touch upon one of the principal defects of modern methods of analyzing character.

2. DYNAMIC TRAITS AND TYPES

Personal *energy* expended in acts of will is fed from the reservoir of drives. Personal dynamics, however, do not remain circumscribed by impulsive activity but emerge into the region of prospective needs and of acts of will that serve to satisfy them. In this region at last there occurs the organizing and fixing of the dynamic processes that guarantee the continued efficacy of character. This dynamic arrangement has a positive and a negative side.

On the positive side, the unregulated discharge of energy that takes place in impulsive activity is replaced by a meaningful economy of energy. It is the nature of the developed character to dole out the available energy with a view to concentrating it effectively in acts of will called out by emergencies, thereby making more certain the attainment of the end.

There is also the negative function of *inhibition*; the energy reserved to deliberate willing must hold firm against both those dynamic impulses that operate *within* the person and those forces that, coming

from *without*, would impose their rule of conduct and action upon the person.

This inhibiting function of character is so important and demands attention to such an extent that at times it seems to represent the essence of character. This much is true, that character can really develop and maintain itself only where it is possible to overcome the antagonistic forces in one's own person and the outside world. A being who is entirely a creature of impulse has no more "character" than one who unresistingly permits the permanent law of his conduct and actions to be imposed from without. It is through this *antagonistic* function, then, that character becomes the symbol of that higher nature which rises above animal impulse and stolid, impersonal passivity to truly personal and inspired action. This capacity to inhibit is all the more impressive because it turns personal energy against the very sources from which it flows. For in any regulating and overcoming of impulse, such as the man of firm character carries out, there always lingers a final remnant of the original connection. Herein lies the greatness but also the tragedy of the conflict between character and drive. The original unity of the *person*, in whom both are embedded, brooks no disavowal.

Nevertheless it would be wrong to discover in this negative function of inhibition the essence of the dynamics of character. For inhibition is merely a means to the end of *liberation* for positive aims. Inasmuch as and in so far as unregulated impulses and outer compulsions obstruct an affirmative, steadfast, and comprehensive setting-of-will, they must be inhibited, and the personal energy of this same setting-of-will may be enlisted to this end; this is the true dynamic function of character. From it, therefore, are the essential character traits of the dynamic sort to be derived. "Strength of will" means the ability to concentrate energy upon the proper act of will, "persistence of will" the ability to guide extensive acts of will through all their phases, "constancy of will" the ability to harmonize many acts of will over a long period of time. In combination these traits form the quality of "*strength of character*." "Weakness" of character, on the other hand, is typified by lowered intensity and persistence of individual acts of will, and by lack of uniformity in successive acts of will. Both characteristics are obviously determinants of the capacity to exert inhibition against outer and inner disturbing factors of character.

Aside from the purely quantitative point of view, however, the qualitative condition of energy output also leads to definite types of character. The particular determinant here is whether the dynamics approach an impulsive mode of expression and thus discharge energy abruptly, or whether action is stamped to a considerable extent by

subjection to inner principles of order and inhibition. The resulting factors are the character traits of ungovernable and governable action; the sub-types (impulsiveness and sedateness, carelessness and caution, laziness and diligence, disorder and pedantry, etc.) cannot be discussed in detail.

3. STRUCTURAL TRAITS AND TYPES

"Structural" qualities concern the *total texture* of character displaying certain *formal* peculiarities. These components of the character make-up were first discovered a relatively short time ago. They are manifestly total features; characterology was formerly preoccupied with partial features.

Since the character is *unitas multiplex* its structure depends above all on whether the factor of unity or multiplicity comes to the fore. The unity of the personality, which can never be relinquished, may become effective in such a way that the various subordinate areas and dynamics of individual striving form an harmonious whole at the very outset, supporting and modifying one another, or in such a way that its heterogeneity, perhaps constituting active revolt, leads to conflicts, internal strain, alternate insurgence and retreat. The antithetical character traits are thus *plainness* and *cleavage*.

Among modern typologists, Kretschmer and Jaensch base their schemes especially upon the antithesis of unity and cleavage. Kretschmer's term "schizothyme" means "having a split nature." When Kretschmer uses the antitype "cyclothyme" (literally translated, "having a circular temper"), this word may be taken in the sense of the rounded-out harmonious type.

The actual origin of these designations is of course otherwise. As a psychiatrist Kretschmer commenced with the two great classes of mental disorder, splitting of personality (schizophrenia) and circular or cyclical (manic-depressive) insanity, the latter fluctuating between an excess of unpleasant depression and pleasant excitement. Kretschmer then found the same typical differences in the normal mind, and to describe them changed the terms as shown above. (The borderline forms between complete disorder and complete normality received the designations "schizoid" and "cycloid.")

For the rest, Kretschmer's type classification is not confined exclusively to settings-of-will and hence to character traits; it emphasizes those qualities that belong more to the region of temperament.¹

Jaensch's classification, "integrated-disintegrated," is also not primarily intended to be characterological, but covers more the whole mental make-up. While the "disintegrated" individual gives rein to the separate functions, sense departments, etc. as separate in getting mastery of the

¹ See p. 569.

world, the "integrated" individual is involved with his whole person, so that sharp functional and regional distinctions become irrelevant for him.

In distinguishing "plainness" and "cleavage"¹ we limit ourselves to what is properly characterological. And we must attempt to elucidate the antithesis by portraying the "plain" and "split" characters as *ideal types*. Psychology knows in reality but more or less close approximations to these pure forms.

In the *plain* character the line of communication which leads from the impulsive background to needs of various kinds, from these to stable settings-of-will and ultimately to their structural unification in the character, runs relatively smoothly. The higher forms of willing transfer to their account much of the self-evidentness of the impulsive drive activity, and even the abstract principles and ideals do not offer such stark opposition to the inclinations and impulses of the moment that they are obeyed offhand.

In regard to the directions of aim the plain character need be in no way impoverished or lacking in versatility. There are indeed those whose plainness consists in one-sidedness; one calls to mind the "home body" whose interests and settings-of-will become completely absorbed in family so that there is no possibility for introception in other regions of value. Then too there is the other kind of plainness, in which the multiplicity of aims is brought into harmony at the very outset; a person of this nature possesses a delicate feeling for the distribution of accents among the demands of the various aims in any particular situation.

For obvious reasons the *conscious* motivation of the will plays a relatively minor part in the plain character. The particular causes for the extensive development of pheno-motives; i.e., *conflict* of motives, the need to conceal the geno-motives, and the desire to justify the action, recede considerably in an harmonious setting-of-will. In so far as pheno-motives appear, they may usually be taken as adequate expressions of the geno-motives. Reinterpretation to allow for heterogeneous motives is therefore usually not required.²

In the *split* character disharmony and tension are dominant. This holds above all with respect to the ways in which the needs and inclinations that grow directly out of an impulse are opposed to the settings-of-will that are evidenced in conscious choosing, setting of

¹ The German terms *schlicht* and *gespalten* are here translated by "plain" and "split" respectively. Although the term "split personality" as frequently used connotes a pathological condition, it is here employed more broadly to refer to a normal personality type. It is evident that the use of the term "plain" is not intended to imply any valuation.

² The exertions of depth psychology, in seeking genuine motives of a different kind behind manifest motives, may consequently easily go astray in the case of plain characters.

norms, and deciding. The split character can carry out the positive execution and organization of his acts of will only by dint of constant *inhibiting* of strivings rooted in the vital sphere. This inhibition may occur in full consciousness as a conflict between coexisting pheno-motives, as a battle between "sense and soul," between "duty and desire." But it may also operate in the personal depths, restraining the impulsive geno-motives from coming to consciousness in pheno-motives. While the first form of inhibition, that is, the *conscious* competition between duty and desire, is emphasized particularly in moral philosophy (as by Kant),¹ the second form, in which the conflict *between* the conscious and unconscious strivings is decided, is the theme of depth psychology, by which the concepts of "repression into the unconscious" and symbolical "transference" were invented.

With such divergence between the spheres of impulse and will, is it still possible to speak at all of the unity of the character and the wholeness of the person? Does not "splitting" inevitably mean the breaking up of the individual into parts that have no connection with one another? If this second question be answered in the affirmative, it would no longer be possible to talk of a "conflict" between the two areas. For as a matter of fact the opposition that exists between them is in itself proof that they occupy a common ground, and that the very tension gives the total structure of man its characteristic nature. It is not a question of opposite and mutually indifferent spheres of action which win out alternately in their rivalry over the individual; the contest is constantly waged *within* the individual as a whole, to whom they both belong and without which they would have no significance. Portion A of the person does not fight with portion B, but the person *fights with himself*; he becomes split and forever returns to transcend the disruption by virtue of his unity.

In the split character *awareness* plays a very different part than in the plain character. In a person of this nature there is consequently a surging of conscious pheno-motives before and after action, requiring thorough interpretation and eventually reinterpretation, since the unconscious geno-motives that operate behind them have a somewhat different nature. The symbolical interpretations of depth psychology are thus essentially cut from the pattern of the split character and are partially warranted.

The differences between the plain and the split character may finally be illustrated by certain *dimensional* features. In the *vertical* dimension the plain character manifests an harmony of personal depths

¹ As a matter of fact it is true that certain fundamental differences within moral philosophy are related to the distinction of types discussed above. Thus Shaftesbury took the ideal of the harmoniously plain character from the ancient symbol *καλοκαγαθία*, while Kant would acknowledge solely the conflicting character as the basis for ethical action.

and surface and hence of being and appearance. In the same direction the split character is disharmonious; its manifestation upon the surface is not identical with its nature in the depths. For this reason willing, even though it seem forthright and serious, is not always as unimpeachably conscientious as in the plain character, but frequently disguises a groping and an unconscious caprice. *Ernstspiel* behavior (see p. 361) is thus far more firmly entrenched than for the plain individual in whom the play-world of make-believe and the serious world of being do not intercept and disturb each other.

In the dimension of *breadth* the "perspective of the character" follows true to type. In the plain character it is of lesser importance; its manifold purposes display equivalent modes of response. But the split character may look different at different times and express itself variously, accordingly as its activity bears upon sex, family, occupation, sociability, politics, religion, etc.

In the *time* dimension the development of the plain character proceeds evenly, that of the disrupted character, jerkily. There is such a thing as splitting between successive life phases; character is never entirely definitive, nor does it present that possibility of predicting future behavior which is consonant with the proper meaning of character.

Moreover there are definite periods of life in which the character is especially inclined to split. This is true particularly of the period of puberty. Inner disharmony, shifting perplexity, and insistent *Ernstspiel* behavior are characteristic properties of the adolescent character, and at times they may even become noticeable in those young people who belong fundamentally to the plain type.

CHAPTER XXIV

SUGGESTION

I. THE CONCEPT OF SUGGESTION

We now take up a concept which is chiefly of a *social* psychological nature, but since this process of social influence affects above all the domain of will and action, it seems most appropriate to discuss it here. In another place (p. 90) we distinguished between "homogeneous" and "heterogeneous" reactions. Any reaction is *homogeneous* in which the response is similar to the external influence. In so far as this involves bodily acts, we are concerned with *imitation*. But when the similarity applies in a certain way to mental acts, *suggestion* is operating.

In English the term "suggestion" is a common word, and it has been used by English-speaking psychologists in a broad and somewhat vague sense. But its modern technical use originated in France, later spreading to other countries. In the beginning, "suggestion" signified exclusively the abnormal influence that may occur in the hypnotic state. As is well known, the hypnotizer is able to "force his will," within certain limits, upon an individual under artificial sleep; i.e., the person hypnotized, who is otherwise completely cut off from impressions from the outside world, accepts the hypnotizer's suggestions as commands against which resistance is impossible.

It was later observed that suggestions like those made in hypnosis could also be made to operate after the subject had awakened. This is "post-hypnotic suggestion." Finally attention was centered upon the fact that it is not at all necessary to put one into an hypnotic state in order to secure effects of this kind, for during the waking state as well the narrowing of one individual's will may be brought about by another. This is "waking suggestion." This concept of suggestion was therewith introduced into the general psychology of the normal individual. Such processes were discovered to take place everywhere in everyday life and in entirely normal situations. While these suggestions usually did not occur in such striking forms as in hypnosis, their widespread effects were all the more significant, since no human behavior or experience appeared ultimately to be free of them, and since they became accumulated into striking phenomena of the order of mass psychology, that is, "mass suggestions."

It is a task of psychology at the present time to throw up a barrier against the dangerous exaggeration of this concept. For if one yields to the tendency to describe all cases of propagating knowledge, opinion, and will as suggestion, and hence reduces the function of education, teaching, persuasion, the formation of political opinions, etc., entirely to the effects of suggestion, the word loses its meaning altogether and is useless in science.

We define suggestion as *the immediate transferring (or taking over) of a mental attitude*,¹ and amplify this definition by naming the source of the suggestion *S* (*S* may be a person, the "suggestor," or a mass of persons, a thing, or a process), and the one who takes the suggestion *R* ("receiver").

a. It is a case of suggestion only when a certain mental *attitude* is produced in *R*. Mediation of knowledge and skills from *S* to *R*, the imparting of rules of conduct and modes of behavior, is in itself not suggestion. Only *attitudes*, that is, inner decisions on *R*'s own behalf, the aligning of the person for or against some content aroused in consciousness, are subject to influence by suggestion. This brings about a paradox which is a peculiarity of all actual suggestion; that *R*'s *belief* in his independence is contradicted by the actual dependence of his attitude. The individual believes that he has perceived something by *his own* senses or that he has acquired by *himself* a feeling or judgment, which leads him to affirm or deny a certain fact, or that he has worked out his volitional determination on the basis of his *personal* motives,—while in reality he is simply taking over and imitating the mental attitudes of another.

b. Not every mental attitude that someone takes over from someone else comes under the heading of suggestion. When the influence is *mediated* by intellectual devices that permit *R* to choose his own attitudes and to substantiate and administer them, it is a matter of instruction and of education of the will, not of suggestion. The concept of suggestion is limited to those processes in which the attitude proceeds from *S* to *R* directly, that is, where *the mere circumstance that S exhibits the attitude suffices to induce R to imitate it internally*.

c. Suggestion is therefore a total relationship between *S* and *R*, an "atmosphere" which alike envelops the instigator and the one influenced. It is primarily a wholly *embedded* function which only secondarily determines the special nature and tendency of the attitude. *R*, renouncing his individuality of action, responds to *S* as a total person and vibrates in the rhythm set by *S*. That is, of course,

¹ Cf. the following analogous, though more detailed, definition given by McDougall in 1920. "Suggestion is a process of communication resulting in the acceptance with conviction of the communicated proposition independently of the subject's appreciation of any logically adequate grounds for its acceptance."

metaphorically; it is a characteristic of these facts of the total person that they resist analysis and can only be portrayed in metaphors.

II. THE ACCEPTANCE OF SUGGESTIONS

The effect of suggestion upon *R* depends upon three conditions. In the first place, *R* must possess a total personal make-up that promotes renunciation of his own attitudes and the taking over of others. This quality is *suggestibility*. It has various aspects. It may involve lack of independence or an easy-going openness to the world; it may be uncritical or actively credulous; there may be lack of initiative or a need for devotion. This combination of negative and positive qualities is of importance to the entire domain of suggestion.

Another prerequisite of suggestion is the creation of a "total atmosphere" by the *situation*. *R* is never subjected merely to stray suggestive stimuli, but always to a suggestive, patterned environment as a whole.

For the infant, being with the mother represents a situation of this sort. The simple soul, who is in court as a witness for the first time, receives from the milieu a strong potential suggestion even before any actual suggestion, as in cross-examination, is exerted upon him. Great throngs of people, at contests, political demonstrations, etc. likewise create that indescribable atmosphere into which each individual plunges, yielding himself up to anonymous impulses.

From these examples it will be seen that it is especially situations saturated with feeling which promote suggestions; and the feelings concerned are of the sort that obstruct the formation of any calm, independent judgment.

Lastly, the effectiveness of suggestion depends upon the personal *domain* that is affected by its influence. Nobody has a general suggestibility in the sense that it extends equally to all areas of interest and activity. On the contrary, there are regions which the individual especially cultivates through his own preconceived convictions, and in regard to which he is thus more resistant; these often comprise the domains of his specialties or occupation. Thus many people have great independence of judgment and will in their own field of knowledge, but as soon as they enter some other field, such as politics, they may become victims of the grossest forms of suggestion, catching up and relaying slogans as zealously as if these were mature products of their own seasoned attitudes.

Suggestibility may be further restricted by the will. If the suggestor requires adoption of an attitude that contradicts firmly entrenched volitional sets inhibitions may result even in very suggestible individuals; *only those attitudes may be suggested which strike a certain resonance in R.'s own setting-of-will*.

An interesting example of this was reported to me verbally by Dr. Helge Lundholm (of Duke University). A lady who was very easy to hypnotize, and who usually carried out in a passive way upon waking any suggestion given during hypnosis, refused to do a certain thing, and persisted in the refusal. It had been suggested to her that on waking she should recite the numbers from 1 to 10 but omitting the number 8. She recited the series, but did not omit the 8. The cause, she asserted, was that she was a mathematician and that, having a mathematical set, she was unable to be a party to the irregularity. In this case, internal control was more powerful than the otherwise weighty influence of suggestion.

The fact that a certain resonance in *R* is required to make a suggestion effective is of great practical significance, notably in regard to the question as to the factor of suggestion in the commission of crimes. The reading of detective stories or the viewing of crime pictures can operate suggestively in strong measure on adolescents, but only when these influences meet a certain predisposition. The principle of convergence also covers suggestion; the individual is never a purely passive victim of all sorts of stray suggestions, but behaves *selectively* on the basis of his will-structure.

The possibility of a sinister effect has sometimes been ascribed to what is called *post-hypnotic* suggestion. It is contended that since the individual under hypnosis is completely without will, the suggestion of a crime which he accepts while in this state will later lead him, with irresistible force, to execute it. Thus far, however, not one case of this sort has ever been proved, and this is not remarkable, since even under hypnosis resistance by one's setting-of-will, although wholly unconscious, remains active.

III. THE EFFECT OF SUGGESTION

While *R*, who takes a suggestion, must always be a single individual, *S*, the factor of influence, involves more complicated conditions.

I. SUGGESTIVE PERSONALITIES

In numerous instances a single individual is here too the effective factor. Leaders in all fields are nearly always "great suggestors," be it in education, politics, religion, or economics. We have just made use of examples of the mother having a suggestive effect on her child, and of the judge upon defendant and witnesses. The capacity of an individual for such a function may be called *suggestivity*; again it is a question of a fact of the total person, which resists analysis. However much voice, appearance, gift of speaking, presence of mind, cleverness, strength of will, and other special qualities may be pointed to in explanation of the effect, at bottom it is the person in his compact

totality who enforces directions upon others; and it is only in terms of this total make-up that expression of eyes, eloquence, etc., acquire "radial significance" as factors in suggestion.

It is of course true of suggestivity, as it is of suggestibility, that its operation depends upon the atmosphere and the partners. There must obtain between suggestor and receiver a resonance which makes the suggestion take effect. Many a teacher has a strong suggestive effect over a few pupils for whom he has this *rapport* while the rest of the class is not open to the influence.

From the point of view of values, suggestivity has two aspects. The personality of all great leaders in history, all advocates of new ideals, have been effective only by virtue of their compelling and magnetic use of suggestion. But *demagoguery* in matters large and small likewise depends upon this selfsame quality. People possessing strong suggestivity who pay no heed to the frightful responsibility involved in their position, may revel in their irrational power, and disregarding the value of their aims, force their opinion and will (whether real or assumed) upon the followers.

2. MASS- AND OBJECT-SUGGESTION

Not every suggestive influence, however, proceeds directly from an individual; it may also have a *super-personal* or *impersonal* source. The effect of masses of people is super-personal, that of objects, impersonal. These influences can operate only because they represent *attitudes* which may be taken over by *R*.

When in the theatre a storm of applause greets the dropping of the curtain, a given spectator (*R*) may be impelled at first to applaud on a purely motor level, merely by imitation. But such impulsion may gradually affect the psychical level; the attitude of enthusiasm, as manifested in the applause of the others, calls forth in *R* allied feelings through imitative expressive movements; the work of suggestion is accomplished.

Such transition from external to internal imitation is most frequently observed in mass suggestion. When a new style comes in, for example, the first response to it is desire, or *affective* acceptance. The latest style of hat is chosen at first because it is new; its wearer soon becomes convinced that she chose the hat because it was beautiful; finally her aesthetic attitude is so strongly influenced by her surroundings that it seems incomprehensible to her that the previous style could ever have brought her equal satisfaction.

The effects of *advertising* will serve as an illustration of object-suggestion. When a city is deluged with announcements of a new brand of cigaret, on every billboard is blazoned not only the objective

information that Brand X exists, but also the attitude, disguised and undisguised, that it is particularly good and cheap, in a word, worth buying. The suggested attitude may gradually become so embedded in the consciousness of a smoker that its origin is entirely forgotten; he demands Brand X in the stores, not because he remembers that it was recommended by advertisements, but because he now has an immediate belief in its value.

The attitude which proceeds from the suggestive factor *S* must in some way be a perceptible phenomenon in order to influence *R*. On the other hand, it is not necessary for an *actual* inner attitude of this kind to be present in *S*. Derisive, spurious, imaginary attitudes can have as much suggestive effect as the genuine. It is of no consequence for the effectiveness of the advertisement whether or not the manufacturer of the new brand of cigaret is really convinced of its special goodness. The prosecuting attorney who puts to the witness the suggestive question "Didn't the man have a knife in his hand?" need not believe at all in the correctness of the evidence "knife in the defendant's hand"; but the witness believes that the prosecutor believes it, and the question has suggestive effect.¹

The contagious influence of *imaginary attitudes* doubtless has a rightful place in life; the effect of art, and of dramatic art in particular, depends to a large extent upon it. But in serious affairs it can wreak considerable disaster. Blind acceptance of the attitude advanced is of the very nature of suggestion. For this reason suggestive people may be encouraged to play upon the suggestibility of others through hypocritical attitudes. *Mundus vult decipi, ergo decipiatur*. Perhaps the fundamental psychological difference between the leader and the demagogue lies in the fact that the former transfers his genuine attitudes to the adherents, while the latter communicates hypocritical attitudes in order to fascinate his followers.

3. AUTOSUGGESTION

In "autosuggestion" the factors *S* and *R* are combined in the same person and are represented only by two different *functions*. Here again a too broad view of the concept must be avoided; not all self-influencing is of the nature of suggestion. An individual who by persistent exertion of will overcomes a fault, a bad habit, or an idiosyncrasy, practices not autosuggestion but self-education. Autosuggestion occurs only when the effect proceeds not from one's own determination and impulsion but from some mental attitude that is in itself independent of will, e.g., when wishes, fears, and expectations are transformed into belief in the reality of their content.

¹ Other examples have been given above; see p. 169 (Binet's bottle test) and p. 329 (telling fairy stories).

Schiller's poem "Waiting" is a typical example. The lover awaits the loved one in the garden, and all sorts of auditory and visual impressions (as the rustling of leaves or the glittering of a white column through the trees) are perceived through autosuggestion as signs of her approach, only to be shown up as illusions in the next instant.

The autosuggestive effect of *wishes* appears in the following example. A young wife is originally entirely indifferent to the business affairs or some special hobby of her husband's. But her wish for companionship with the husband results in his activities taking on for her an affective tone that gradually becomes more and more genuine. Finally she will not admit either to others or to herself that her passion for music or her interest in sports, or whatever it may be, could be merely the secondary product of suggestion of a different mental tendency within her own person.

A final example shows how even a strictly exact scientific method does not provide complete security against autosuggestion.

During the period of discovery of radiation a French physicist thought he had discovered a new kind of ray, the effect of which was manifested by the somewhat intensified brilliance of an incandescent wire at the instant of passing the new ray through it. He saw this added brilliance of the wire every time the ray was turned on, and its dulling on cutting it off. His assistants likewise saw this—but no other physicist could repeat the experiment. At last the discoverer had to admit that he had been mistaken. Wish and expectation had affected his sense perception by autosuggestion (and at the same time that of his assistants).¹

4. CONTRASUGGESTION

Contrasuggestion consists in *R*'s responding to the attitude of *S* with the *opposite* attitude. There are people who do not take up a fashion, precisely because it is accepted by everybody else as a dictate, and people who are not carried away by the mass-atmosphere in a church, at a meeting, or at a celebration, but are thrown into the opposite mood. There are children who refuse food or toys with vehemence simply because they are proffered by adults as especially pleasing and enticing.

At first glance such behavior seems to have nothing whatever in common with suggestion, but to be the mark of particularly strong independence and self-sufficiency. But this is misleading. Besides resistance on the basis of strength of individuality there is resistance on the basis of weakness. Mere negation is far removed from originality, for neither the trend of the attitude nor the manner of dealing is rooted in one's own soil. It is dependence—with the sign reversed.

¹ See the report by Otto Sackur.

Blind opponents have no greater power of resisting suggestions than blind "yes-men."

IV. EXPERIMENTAL INVESTIGATIONS¹

We previously encountered suggestion as a problem of experimental psychology in connection with illusions of perception, memory, and imagination;² a few additional remarks may be made. Both the *S*-factor and the *R*-factor in suggestion may be studied experimentally, comprising as they do the *suggestivity* of certain influences and the *suggestibility* of certain individuals.

I. SUGGESTIVE FACTORS

A suitable object for the first investigation is the *suggestive question* ("leading question"). The manner of questioning (as in *Aussage* investigations) may be varied experimentally in many ways. Thus it was determined by Binet as well as by Lipmann and Wendariner that the falsifying effect of a leading question was proportionate to suggestiveness of the question as formulated.

The following example covers a range of suggestive questions all bearing on the same item. In a picture that is used for *Aussage* purposes there is among other things a dog. After the picture has been exposed this animal may be made the object of various questions:

- (1) "Is there an animal in the picture?" (Non-suggestive question.)
- (2) "Is there a cat in the picture?" (Insinuation of false idea; gentle suggestion.)
- (3) "Is there not a cat in the picture?" or "There is a cat in the picture, isn't there?" (so-called "question of expectation.") The subject is misled into the view that the questioner assumes the existence of the cat and consequently expects the reply "yes"; vigorous suggestion.)
- (4) "What color is the cat on the floor?" (So-called "anticipating question.") The assumed existence of the cat is no longer brought into question, but taken for granted. It takes greater intellectual integrity in order to reject this highly suggestive interpolation.)

The suggestive effect of *expectancy* was investigated experimentally by Binet and others in the field of sense perception. The following was reported in a research by Kosog (Breslau) with children 8½ years old. Kosog showed each subject a white paper with a black dot. The child then stepped backward until he no longer saw the

¹ The most comprehensive publications on experiments with suggestion appeared chiefly at the turn of the century. See Binet's *La Suggestibilité* and numerous articles in the two volumes of W. Stern's *Beiträge zur Psychologie der Aussage*. Occasional special experiments have been published since then. A newer publication is that of C. L. Hull, *Hypnosis and Suggestibility*.

² See pp. 169, 258, and 333.

dot, and approached the paper slowly until it again became visible. The experiment was repeated three times, thereby creating an expectation of further repetitions. But before making the fourth trial the paper was secretly replaced by an entirely blank sheet. In spite of this, many children stopped during the next three trials at about the same point, being certain that the (non-existent) dot was just visible. 51 percent of all the pupils were taken in by this expectancy suggestion. The results of suggestion were even more marked in corresponding experiments with auditory, gustatory, and olfactory impressions.

2. TESTS OF SUGGESTIBILITY

Experimental studies of *suggestibility* yielded marked individual differences; hence suggestibility must be viewed as an outstanding quality of individuality. Needless to say, the *symptomatic* value of a test of this kind must be estimated with extreme caution. For since receptivity to suggestion depends, as we saw above, largely upon the "atmosphere" and upon the mental area active at the time, it is likely that the degree of suggestibility determined by experiment is influenced in part by the experimental conditions, and therefore has scant significance in individual diagnostics.

Zietz performed experiments with a girl and a boy, in which *Aussagen* were reported, first for a picture, and then for a real event. The girl could resist the suggestive questions about the picture almost in toto, while she fell in with the suggestions in most cases in the test of a real event. With the boy the reverse occurred. The two children thus displayed different kinds of suggestibility, according to the nature of the test.

When checked by other statements of the same individuals, gained by observation and teacher's reports, the results of the reality tests proved to be much more characteristic than those of the picture test.

The great dependence of suggestibility upon *age* was apparent when children of different ages were tested by the same method.¹ The time of puberty may of course spell an increase in receptivity to suggestions due to the altered circumstances of impulsive activity and the disturbance of mental equilibrium.

If suggestibility is identified with "intellectual dependence" one would expect a high negative correlation between suggestibility and *intelligence*. This hypothesis led to the evaluation of strength of resistance to suggestive influences as a mark of intelligence, and to the insertion of appropriate tests into intelligence scales. But this simplifies "suggestibility" far more than is justified. In numerous cases more intelligent subjects have shown greater susceptibility to

¹ For the data see p. 265.

suggestion than the less intelligent (e.g., in the experiments by Kosog mentioned above). Lively people often have vivid imaginations, which furnishes a fertile field for suggestive influence; the urge for esteem and vanity can also have the effect of *R*'s not being willing to disappoint the apparent expectations of *S*. *R* may thus finally think he sees some particular object (in sensory suggestion) or that he has a certain recollection (in suggestive questioning)—merely because he strives for positive accomplishment of the task.

A little experiment by Binet is instructive in regard to the characterological basis of suggestibility.

A card with several miscellaneous objects (buttons, pen nibs, etc.) was exposed for a brief time to a *group* of subjects. Then inquiries were made concerning objects that were present and also about objects that were not there. Soon there developed within the group a leader who, through ambition, always answered first; he gave no time to reflection and was taken in by the suggestive questions with especial frequency. His certainty had a suggestive effect upon the others who now likewise claimed to have seen this or that thing that was not there at all. While the suggestibility of the leader was due to a desire for dominance and reckless impulsiveness, the same effect in the others had a different psychological character originating in a lack of initiative and in a certain tendency to yield.

CHAPTER XXV

PERFORMANCE AND ITS PERIODS

I. OBJECTIVE AND PERSONAL PERFORMANCE

1. OBJECTIVE PERFORMANCE

Taken in its objective sense, "performance" is the production of something of measurable value through expenditure of measurable energy. In this sense the concept is not limited to living beings; a waterfall or a machine is able to carry out performances of the most decided kind. Since the values produced as well as the amounts of energy expended are measurable, a performance can be objectively graded and different performances compared.

Performances may be compared in terms of the amount of value produced (machine A produces twice as many goods in a day as machine B). They may be compared with respect to the amount of energy expended (machine A requires three times as much coal, oil, etc. as B). By combining both figures we determine the specific, objective measure of performance, as the ratio of efficiency to energy required. The measure of performance of machine A would accordingly be two-thirds that of machine B.

Objective measures of performance may also be attained for human beings. The goods produced by them and the labor required may be compared in diverse ways with those of other people or non-human norms (animals and machines). It may then be stated that the objective capacity of a machine is equal to that of ten men. We call the objective performance of the winner of a race greater than that of the losers, or the objective performance of a pupil greater than that of the rest of the class, whenever work of a higher grade is accomplished in the same time, or work of the same grade is accomplished in less time.

2. PERSONAL PERFORMANCE

With *people*, however, we require an altogether different conception of performance, and our real problem is the problem of *personal performance*. This may be defined as *the production of something of value through the action of will by exerting personal force*.

Personal performance therefore assumes in the first place some *act of will*. Machines do not "act" at all; they *function*. In building a nest the bird completes an action, but it is an instinctive action.

But the artisan, the athlete, the author, the student, in performing, *will* to produce something of value.

In the second place, *utilization of force* goes with personal performance, i.e., the execution of the act requires the overcoming of resistance.

A short theoretical discussion concerning the concepts "force" and "energy" must here be inserted. "Energy" is the general ability to change physical states in a measurable way. This capacity is diffused throughout the world and not attached specifically to particular substrates; therefore the concept is applicable interchangeably to non-living structures and to organisms. "Energy" is a mere formal and quantitative category and has nothing to do with the goal-directedness of a particular individual. We still need an independent designation for that ability of a living being to focus the available amount of energy upon its specific goal by surmounting hindrances and difficulties. This is "force," which must be considered as the individual property of a given living unity. More exactly: force is personal activity itself as related to the management of the available energies. This assumption in no way violates the generally acknowledged laws of energy systems. For the force of an organism or of a person is not another form of energy among other forms, nor does it increase or decrease the amount of existing energy. Rather is force the "engineering" principle that utilizes, directs, organizes and focusses the energies so that they are brought into the most suitable coöperation for fulfilling personal purposes.

The concept of personal force is altogether psychophysically neutral. Personal force may be sustained by bodily sources (e.g., nutrition) or by mental sources (e.g., self-discipline); likewise it may be directed upon bodily goals (as by gymnasts) or upon mental goals (as by mathematicians). And the resistance that it overcomes may again be physical (e.g., bodily weakness) or mental (lack of talent), the force itself remaining unaffected in either case.

A casual stroll uses energy and also produces something of value (e.g., bodily invigoration); it may therefore be regarded from certain angles as an objective performance. It is not a personal performance, however, since it does not require definite directing of force to overcome obstacles. A day's climb in the Alps, on the other hand, is a personal performance, as are also the few halting steps attempted by a convalescent for the first time after a serious illness. In these instances special impulsion and concentration of force are necessary for exploiting and reorganizing the available energies.

3. THE RELATION BETWEEN THE TWO KINDS OF PERFORMANCE

The dual significance of the concept of performance not only leads to verbal confusion but frequently makes for disorder in estimating

human performances. Order can be created only by the distinction here developed; in each case it must be determined whether an objective or a personal performance is the object of the judgment. There are often far-reaching discrepancies between the two modes of measurement and appraisal.

In sport there are definite super-individual scales of appraisal; an achievement that rates high in this system of measurement passes as a "first-rate" performance. But a practiced champion may attain this rank without great effort, or "just for fun," while a young novice must exert all his powers to the limit in order to achieve the result. For the former it is not a personal performance at all, though it is one for the latter, while the objective performance remains the same for both.

After written work in an arithmetic class, the papers of all the pupils, taken objectively, are rated in terms of the measure of absence of errors, and the performances ranked accordingly. But the teacher must also individualize the work; from this point of view the personal performance of an untalented pupil who on this occasion has managed to make only five mistakes, thanks to extremely intensive preparation and supreme effort during the test, should be ranked higher than the perfect paper of his highly talented classmate.

Wherever human activity is classified according to social or economic standards, and where the outcome is consequently closely connected with other *extra-personal* factors and productions, objective estimation of performance predominates. While a mediocre performance in calculating may, as in our last example, be praiseworthy as a personal accomplishment, it will not qualify one for an occupation that cannot be successfully pursued without high objective performance in this line. Examinations in education, psychotechnical tests, athletic contests, etc. are concerned primarily with the ranking of individual performances by *objective* scales of estimation. The same is true of purely economic estimates of performance (as in our example of equating the labor of ten men to that of one machine).

People are not, however, mere producers of objective results, but self-acting *persons* who *endeavor* to produce something of value. This endeavor, even though it achieves lesser objective values, still produces values in quite another sense: *it enhances the person's own worth!* Whoever devotes *effort* to an objective performance thereby effectuates a *personal* performance, by aspiring, working on his own, and overlaying his merely vital activity with active value-introception. In trying to "do his best," the individual is accordingly striving to *become* his potential best. Lipmann recently called this central factor in all personal performance *self-aspiration*.¹ (*In magnis et voluisse sat*

¹ *Selbst-Beanspruchung.*

est.) Its relation to the achieving of objective performances is exceedingly complicated.

The prerequisite for an individual's performance in any domain of value is first of all his possession of certain *instrumental dispositions* appropriate to the execution of the task. These are partly intellectual dispositions, including generalized endowments like intelligence and memory, and special endowments or "talents" that pertain to restricted areas of value.¹ Then there are the physical or the psycho physically neutral instrumental dispositions, such as health, bodily vigor, dexterity, etc. But the transformation of these "capacities" for performance into actual performances does not occur of its own accord. *Aspiration* is here involved as the means of actualizing them; upon it depends to a large extent the *use* that is to be made of this latent store of gifts and skills. Determination and deed, onset of will, and above all, concentration of force upon the goal aimed at—these are the products of aspiration.

The intensity of aspiration varies no less among individuals than do the capacities for performance mentioned above; Lipmann calls this quality "readiness to perform." Two individuals who are equally "gifted" in some regard show promise of very different performance expectations if their readiness to perform is diverse. Conversely, a lack of talent may be more than compensated under certain circumstances by greater capacity for aspiration even in respect to objective production.² Neither the demonstration of definite bodily powers and dexterity nor the demonstration of definite intellectual capacities furnishes any guarantee of corresponding actual performance. In this respect man *differs* from the machine, the actual performance of which can be predicted with considerable probability if the efficiency and the coördination of its parts are known.

A higher degree of aspiration will at first increase the value of objective performance; whoever takes pains will achieve more. But the reverse relation also holds. The taking of pains involves considerable expenditure of force; this force is not only exploited by the goal of objective performance, but must be devoted in part to the effort of carrying out one's own will. On this account the individual's economy demands a sparing use of aspiration. The less the effort that must be devoted to performance, the more completely may the energy at hand be utilized in bringing about objective values. In other words, for a given quantity of energy, decrease in the extent of personal performance increases the chances and grade of objective performance.

¹ Cf. p. 316.

² See p. 317.

II. PERIODS OF PERFORMANCE

I. GENERAL REMARKS

An individual's capacity for performance is never constant over a period of time. The universal law that all life activity is carried on periodically is patently in evidence in the capacity for performance. The periods are above all *intra-personally* conditioned; external influences are of effect only within narrow limits. Moreover, the periodicity is psychophysically neutral; both organic and attentional processes, physical and mental abilities, are subject to it.

This personal periodicity is determined by the *superposition* of energy waves of the most varied frequencies. From fluctuations of attention of a few seconds' duration to periods of development covering many years there is a wide range of superordinate, subordinate, and intersecting periodic arrangements. These can be separated, of course, only in an abstract way. They are really nothing but contingent aspects of the sweep of life, comparable to the ever-moving sea, whose surface takes on its total nature from the mighty ebb and flow of the tide, from large billows, smaller waves, and the minutest ripples. This analogy, however, is imperfect; whereas in the case of the sea, a material "thing," a multiplicity of physical energies must be taken as the determining condition of its resulting total form, personal periodicity is first and foremost a dynamic formation arising from the totality of the person himself. The relative independence that any particular periodic arrangement appears to possess is upset by reference to the whole.

2. BRIEF PERIODS (RHYTHM)

The briefest periods have a span of but a few seconds. They are typified in the mental domain by fluctuations of perception and attention, and in the physical, by the heartbeat, by breathing, by arm-movements and by the gait. The close connection of these periods is indicated by the fact that we often unconsciously adapt our gait to music that we happen to hear. And as experimental investigations and graphic records of breathing and circulation curves have demonstrated, these dynamic processes tend to conform to attentional performances that occur simultaneously.

A designation that transcends the distinction between different areas of the person is applied to these brief fluctuations. This is *rhythm*. We speak of rhythm when the flow of activity resolves itself into a series of repetitions of dynamic units, biologically or mentally or both.

The term should be applied only to those periods in which the dynamic rise and fall of each wave comes into immediate experience as a *whole* and their succession as a *repetition*. The concept of *rhythm* is therefore narrower, and more colored by the person, than the concepts "periods," "time" (in music), "metre" (in poetry), and the like.

As we noticed above (p. 157), the strongest incitement to rhythmical experience proceeds from *auditory* impressions of music, speech, working conditions; but there are also purely visual, purely tactal, and purely kinaesthetic rhythms. It must be emphasized, however, that whatever may be the modality that first releases the rhythm, the rhythm does not remain restricted to that sphere but affects the *total person*, who assimilates its peculiar dynamic structure both in terms of inner experience and in sensori-motor terms.

There are personality differences, moreover, in this regard, which are reminiscent of the distinction previously made (p. 447) between the integrated and the disintegrated type. With many people a rhythm remains restricted for the most part to the sense-department in which it was chiefly produced; with others it quickly becomes totalized. The former are able to fall in quietly with a purely auditory rhythm; the latter are unable to refrain from beating time to it, tapping with the feet, or even breathing in time.

Where this second type is very pronounced, the individual feels himself embedded in the rhythm and supported by it. This experience occurs not only in connection with music and dancing, marching order, etc., but also in the course of working at machines, the periodic vibration and pounding of which is caught up into the internal rhythemics of the worker.

Rhythrical activity and experience are among the most primal phenomena of all human existence. "In the beginning was rhythm." This is true likewise in developmental psychology, for with the child as with the race as a whole the rhythmic factor of music is developed far earlier than the melodic and harmonic factors.¹

The absolute duration of brief dynamic alternation is to a certain extent bound up with the personality. Each individual has his *personal tempo*, i.e., an optimal time of rhythmic events and experiences. The less the speed of activity is interfered with by external causes, the greater is the sway of this natural rhythm.

Thus while the personal gait cannot be determined for anyone who has to hurry to the railroad station, it can be determined for those who go about their business under no compulsion of haste, as may the speech tempo of anyone who is reading or conversing leisurely, though not for one who must finish a comprehensive lecture in a prescribed period of time.

¹ See p. 319.

This is important methodologically. When planning the exploration of one's "natural" tempo by tests one can never use the instruction: "act as quickly as possible"; rather must one advise the subject to act "at his most convenient speed."

The question is whether the tempo of an individual as manifested in a certain area (e.g., in tapping) is to be considered generally as an index of his total "personal" tempo. One might easily credit this relation since "tempo" seems to belong together with "temperament" i.e., with the total dynamics of the person.¹ But more recent investigations have not confirmed this supposition.

Allport and Vernon² using very different forms of tests at "natural speed" came to the conclusion that there are at least three group factors of natural speed: verbal, drawing, and rhythmic (tapping). "Our results indicate that instead of admitting a single 'personal factor' it would be nearer the truth to postulate 'speed factors' of only moderate breadth."

Dr. Allport's explanation for this partial inconsistency does not go so far as to divide the person into independent branches of expressive movements. He is convinced that there are common traits characteristic for the whole motor set-up of an individual. No such trait is to be found, however, in the formal and merely quantitative factor of speed; rather is this factor often pushed to the background by qualitative and more deeply rooted motor attitudes, like fluency, expansiveness, centrifugality, etc.

The following considerations are restricted to the *rhythrical tempo* of an individual. Within this field active and receptive attitudes are closely connected; people who prefer slow tempos when they play music usually discover that pieces to which they listen should be played or conducted more slowly.

The *difference limen* for the appropriateness of tempo is very exact. Any musical person has an absolute notion of the tempo of a piece that is "right," "too fast," and "too slow." The listener does not have to compare several renditions of the same piece in different tempos, for he carries his standard and his tempo within himself. The same is true of the active tempo: tell anyone to tap out a series of three-part beats on the table with a pencil, and a speed of tapping soon develops which appears to the person tapping to be the "right" speed. This may be taken as a convenient measure of his rhythmical tempo. (It suffices to let him tap for half a minute, while counting the beats tapped out in this time.)

¹ This was also my opinion when I introduced the concept *persönliches Tempo* in 1900 (in *Psychologie der Individuellen Differenzen*).

² *Studies in Expressive Movement*, pp. 100-105. Cf. also their references to other investigators.

The method of tapping was proposed by me in 1900 in order to determine mental tempo; since then it has frequently been made use of. Recently Mrs. Frischeisen-Köhler undertook very extensive investigations by this means, no definite rhythm, however, being prescribed.

The *flexibility* of one's tempo varies greatly. With those people, described above, who are easily won over by an external rhythm (musical, marching, mechanical), the rhythmical tempo is very flexible. There are others for whom an imposed tempo spells extreme constraint because their own tempo is coerced by it. To a factory worker of this type work at a conveyer with a compulsory rhythm may finally become unendurable.

3. DAILY CURVES

The most incisive dynamic periods in the course of human life are described by the twenty-four-hour day and night span. In the waking state the individual makes disposition of the quantity and concentration of energy necessary for performance; during sleep there is no personal performance because the will to overcome resistance is at rest. Consequently the dynamic characteristic of sleep is the *quiescent state*; not only the limbs are at rest, but so too are active mental functions like attention and concentration of thought and will; bodily and mental reactions alike are slowed down. Energy, to be sure, is expended during sleep, with every breath drawn, in digestion, and in all dreaming. But this expenditure of energy is reduced to a minimum, new and efficient energies meanwhile being gathered from the physical and intellectual material that was taken in during the waking state. The fundamental dynamic difference between waking and sleep consequently lies in the expenditure of energy in the former state, and the storing up of energy in the latter.

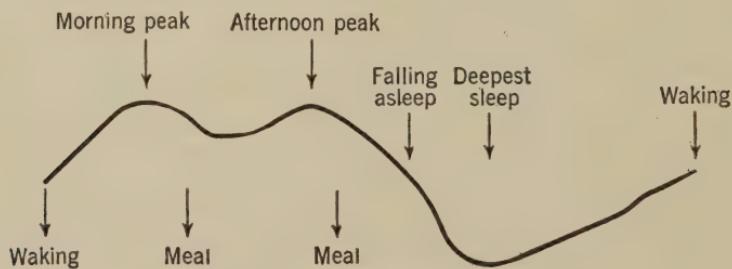


FIG. 17. 24-HOUR ENERGY CURVE.

But these fundamental characteristics are not adequate for describing the dynamic picture of the 24-hour curve. The individual does not remain on the same level during waking, nor in an equally constant depth during sleep, so far as energy is concerned. On the contrary, there is fluctuation of energy *within* each portion of the curve, which

though less in amplitude is of great significance for life. Figure 17 presents a diagrammatic norm in schematic form; in particular instances this may be modified by numerous internal and external influences (which we cannot discuss here).

The *daily energy curve* does not start at its full height on waking; it takes some hours for it to attain its first maximum (in the middle of the morning). Between morning and afternoon there is a drop (usually in conjunction with eating), representing a period of lessened alertness and capacity for performance, which may even involve a short nap. In the middle of the afternoon a second maximum occurs, followed by a falling off of energy (tiredness in the evening).

In experiments in the rate of tapping that I performed on myself and my wife, using intervals of one hour, the scheme of the day curve plainly has the form of a spread-out letter M (Fig. 18). The period of three-part rhythm in tapping depends not only upon the personal tempo but also upon the degree of freshness during the day. The tempos for ten normal days being recorded in three-hour periods, the ordinates give the average durations of individual beats in seconds. In my case (A) a single three-part measure took on the average more than one second in the morning, .9 seconds at noon, .97 seconds in the early afternoon, .92 seconds in late afternoon, and one second in the evening.¹

The energy curve during sleep may be inferred only indirectly by measuring the so-called "deepness" of sleep. Sleep is considered to be deeper when there is less manifestation of energy (in movement and dreams) and when the contrast with waking is greater (i.e., when it is more difficult to *awaken* one). Kraepelin and others used increasing intensities of sound for waking. The intensity of the stimulus that is just able to interrupt sleep is taken as the measure of the deepness of sleep at that instant. By this means the finding, which agrees well with every day experience, was obtained showing that soon after going to sleep the energy curve falls rapidly, the state of deepest sleep being reached in a few hours; thereafter sleep usually shows a long slope (Fig. 17).

This form of the sleep curve is of significance for the economy of

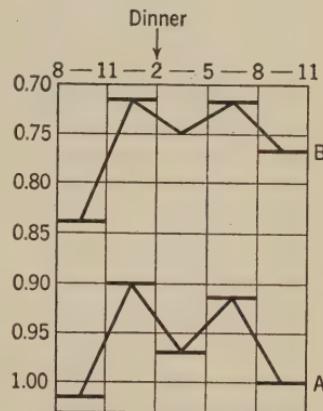


FIG. 18. DAILY ENERGY CURVES.

¹ As to individual differences between A and B, the personal rate of movement for B is noticeably faster than that for A. The fluctuations of energy in the course of the day are smaller for B than for A except at the beginning of the curve.

energy. Since deep sleep indicates a particularly favorable relation between restoring and outflow of energy, the first few hours of sleep afford a far greater restitution than do the last. In sleeping only four instead of eight hours one is assured of not merely half but of a larger fraction of effective restoration.

4. PERIODS OF A HIGHER ORDER

A few remarks must suffice to cover energy periods of a higher order in point of length. The *monthly* periods in women manifest not alone purely physical symptoms but also increased psychical lability. More detailed descriptions of these oscillations may be found in medical literature.

While *annual* curves may of course be described, these have the peculiarity of being subject to a great extent to the distorting effect of cultural influences. The more closely a living being is bound to nature and its seasonal changes, the plainer is the annual periodicity of its life. With many animals a considerable discharge of energy (rapid growth, metamorphosis, reproduction and nurture) occurs during a relatively brief but fairly constant portion of the year, the rest of the time being given to lessened activity, notably during hibernation. Even with human beings of a low culture an annual curve is unmistakable. The peasant "sleeps out" the winter that from early spring until autumn he may work with more intensive performance while taking but brief periods of sleep.

With a higher degree of culture, however, the energy economy is more equalized over the seasons. The longer nights in winter conduce only slightly to longer periods of sleep; night is turned into day. It is especially striking that sexuality, which is the strongest manifestation of energy, no longer knows seasonal limits in man, but at most fluctuates within relatively narrow limits, as the birth statistics show.

That the *entire course* of an individual's life may be regarded as one great energy period at once becomes evident. Childhood and adolescence mark the rise; the more mature years form the "acme" or peak; following these, force diminishes, as do intensiveness and extensiveness of performance.

Charlotte Bühler recently showed by penetrating analyses and comparison of life histories the validity of this total curve of life. But at the same time she found that particular realms and areas of personal life (as public activity, creative work, sociability etc.) have their specific curves, similar in form to the totality curve but located with their rise, peak and fall in different portions of time.

The curve of life, moreover, has its profile. Smaller rises and falls appear within it, each covering a period of years; a phase of rise and

of performance that is especially marked is followed by a phase of slower advance, which is chiefly taken up with the gathering of force and with preparation for the next phase of expansion. Closer considerations remain for the most part open questions, such as the universality of this phenomenon (the findings thus far pertaining primarily to historically important, creative personalities), the agreement between person and person of the *duration* of corresponding parts of the curve, and the constancy for the life of one individual, etc. It smacks almost of magic numbers to assert that each period lasts seven years (Fliess and others).

It must be admitted that such figures are correct at least for the period of childhood and youth. Early childhood, the school age, and true adolescence actually comprise from six to seven years each, and each of these epochs shows a steeply rising portion of the curve, very rapid development, and a slowly sloping portion, halting progress and inward elaboration. Yet it is highly questionable that one may postulate several "adult periods of puberty" beyond this in approximate seven-year cycles.

CHAPTER XXVI

ATTENTION

Much labor, theoretical and experimental¹ has been bestowed by psychology upon the problem of attention. But this work has dealt almost exclusively with the conscious nature of the *contents* coming under attention. The notion was often frankly stated that attention itself is simply enhanced sensory and cognitive clearness of mental contents. The theory was further cramped by the singling out of sensations, perceptions, and meanings (e.g., of words, sentences, pictures) as the chief "objects" of attention; contemplative attention was practically all that was considered. As a result, the whole subject received a static and lifeless cast.

Only in very recent years, due in part to psychopathology and in part to psychotechnics, has the essential relation of attention to the categories of performance and force begun to receive consideration. The discussion to follow will combine both aspects under the focus of personalistics.

Attention is that personal state which constitutes *the immediate prerequisite of a personal performance*. The essential characteristics of attention are the *clarification* of the goal in consciousness and the *concentration* of force upon clarifying and attaining it.²

I. GOAL-CONSCIOUSNESS

I. THE STRUCTURE OF CONSCIOUSNESS

One feature of any "performance" is the overcoming of obstacles. Anything involving conflict arouses awareness. On this account a set for performance must bring the object of the performance into awareness or strengthen any awareness already present.

Two friends are taking a walk in the country. One of them is pleased by nature as a whole, enjoying the light, colors, and air, but his experience of it all is conscious in a diffuse way and to no very high degree. The other, who is a zoölogist, is interested in the fauna and wants to check up on the varieties of beetles. This goal of performance has the effect of

¹ For experimental treatments see the monographs of Dürr, Henning, Geissler, Mann, and others.

² This dual definition was first set forth clearly by Alfred Mann.

bathing specific, narrowly circumscribed areas of the landscape, now a bed of moss, now the bark of a tree, now a moving object, in a special conscious brilliance. Sensory clearness of the object thereby increases, and intellectual comprehension of it through categorial classification ("this is such-and-such kind of beetle") is made possible. At the same time, awareness of all other impressions is far less than for his less attentive companion.

When we call those perceptions "clear" which are within the focus of attention, and those perceptions "dim" which lie outside it, we do not impute to the contents of perception and ideation true attributes which modify it in the manner of the attributes of coloring and form; we are describing the way in which the person *takes possession of* the contents.

An older theory in line with elementaristic psychology maintained that "clearness" attaches to the content as such, thus wasting much energy over the question as to whether sensations, for instance, are modified by a definite attribute of "clearness" that may be ranged with intensity, quality, and the rest. It seems to us that this question is improperly stated.

Wundt, Wirth, Pauly, Mager, and others dealt experimentally with the further question of whether the *range* of attention could be more closely defined. At first the problem was primarily one of elementaristic psychology; how many items can be taken in at the time by attention? These experiments were usually arranged so as to present various numbers of items ("elements"), such as dots, digits, letters, etc. for an instant,¹ determining the number of them that could be clearly grasped in a *single* act of attention. It was usually from four to six items.

Another result was of more importance than this number; the number of "elements" identifiable instantaneously multiplied rapidly if they composed a meaningful whole. Wundt himself discovered that three times as many letters could be comprehended at once when they were contained in intelligible words as when they stood alone. The same thing is true of the comparison of individual lines and the lines contained in a geometrical figure.

This finding is one of the most telling arguments against elementaristic psychology. Under attention there *are* no "elements" at all, but simply totalized goals of performance, such as a figure to be recognized, a word to be understood, etc. The ability to survey such a whole depends far more upon its personally significant Gestalt than upon the number of parts that can be discerned within it.

¹The apparatus employed for this purpose ("tachistoscope") permits of remarkably brief periods of exposure which can be varied.

The conscious emphasis attaching to the content of the attentional field may vary greatly in intensity. On this account "levels of awareness" are distinguished. These depend in part upon the degree of interest, in part upon the difficulty of the performance. In order to recognize a photograph as a portrayal of a man, no special degree of awareness is required. But if I attempt to find the man in a complicated picture-puzzle composed of tree branches, winding paths, etc., many details must be subjected to intensive awareness.

In experimental investigations various degrees of awareness have been studied with some exactness in *successive* acts of attention. When a card bearing a long printed word (such as "contemptibleness") is exposed momentarily in the tachistoscope, the observer at first has merely the vague impression of an irregular line of type. With each successive exposure of the same word its content becomes plainer, individual letters or an inaccurate total meaning making their appearance; the perceptual image of the line continues to increase in sharpness, until finally the entire word may be clearly read.

During an act of attention consciousness possesses a peculiar dual alertness for both that which is given presently and that which is next expected. Fulfilment and the demand for fulfilment are always present in experience at the same time; consequently attentional comprehension is at once a *state* having some particular vividness and a *moving forward* to a new and higher awareness. At the instant the intended performance is fulfilled awareness quickly falls away, for a purely static prolonging of conscious clearness is impossible in attention. The one component or the other must always predominate. The static component takes the lead in contemplative attention, the dynamic factor of tension in searching, expecting, productive attention.

2. DIRECTIONS OF ATTENTION

Any area in which personal performance is possible may provide objectives for attention. As in the case of acts of will,¹ we must distinguish at the outset between acts of attention having alien reference and those having self reference, which are the more complicated. The ability to focus consciousness upon one's inner mental activity develops late if ever and never becomes properly organized in many people although they are able to concentrate with great clarity upon external things and abstract problems.

Outwardly directed attention applies to *non-practical* and to *practical* areas of performance. In the former case the clarification of conscious contents is not merely preparatory to the goal of performance but is itself that goal; thus sensory attention is directed upon clear and in-

¹ See p. 403.

telligible perceptions, and intellectual attention upon the products of thought, memory, and imagination. For the most part, the boundary between sensory and intellectual attention is not sharply defined; the instant a sensory object is "observed" attentively it is straightway put into certain categories of regard and reference, i.e., it likewise becomes an object of intellectual attention.

Practical performances are either executions of movements as such (as in athletics) or concrete productions (as by artisans). Man is primarily an active being; all of his simpler performances are closely related to bodily motion. The attention that an artisan devotes to his work is no pure observation of the sensory items nor a pure reflecting upon the problems of the job. He does not regard the make-up of the material contemplatively and from all angles for the sake of its sensory attributes, but is concerned with them only in so far as these attributes have a bearing upon the work in which he is engaged. Conscious *selection* and conscious emphasis of individual features are thus determined by the task as a whole; in most every day instances and for the run of people this is one entire sensori-motor task.

On the other hand it is of course a prime affair of attention to make the interfused aspects of this totality so salient that their characteristics, important for performance but otherwise subliminal, may receive special regard (analytical attention).

II. THE DYNAMICS OF ATTENTION

I. CONCENTRATION AND DISTRACTION

Personal force ordains the distribution of energies within certain limits. In the act of attention energy immediately available for the performance at hand is summoned and utilized at once. Or to put it more briefly, in the act of attention the individual becomes "concentrated" upon the performance.

The state of having energy immediately available is called "tension," and this tension, which is always involved in attention, is *psychophysically neutral*. Not only experience, but also those parts of the body which are related to the performance, are "tense" with respect to what is about to occur.¹ Both may interfuse completely with each other. In the attentiveness of the watchmaker who is adjusting a cog or of the athlete who is ready at any instant for the signal to begin the race, the physical and mental tension are one and the same. Concentration of physical energy is never lacking in purely mental performances, e.g., in solving a mathematical problem or a

¹ These bodily tensions are experienced as certain *sensations of strain*, which thus constitute the accompanying phenomena in every experience of attention. Older psychologists often ascribed too great significance to these incidental phenomena.

riddle; in such cases they occur predominantly in the region of the head (wrinkling of the forehead, holding the head with the hand, grimaces).

The dynamic structure of attention must be completed by the ever-present counterpart of concentration: dynamic *inhibition* of the other areas of personal activity.¹

Since the person's supply of energy is limited at all times, concentration upon one area is obtained at the cost of withdrawing energies from others. The sharper the focus directed upon the specific performance, the duller the background into which all the rest of personal existence is thrown. In concentrating closely upon anything, whether internal or external, one sees and hears nothing else that takes place about one; not moving a muscle unless it pertains to the performance, and even holding one's breath temporarily in order to devote all powers with precision to the task. When two people while taking a walk become absorbed in complicated discourse that requires closest attention for stating their thoughts, they suddenly stand still because walking would divert too much energy. Conversely, when crossing a congested street requires attention to be directed especially upon walking, they must interrupt the conversation and can think of nothing but their path.

Thus maximal attention to one thing is at the same time maximal inattention to another; from this point of view attention might be called "partial sleep."

This fact is not always accorded due consideration in practical life. When an individual has witnessed some event it is assumed, provided his mind and senses were sound, that he must have perceived the individual component processes and is therefore able to give testimony about them later. Suppose, however, that in spite of the witness' physical proximity to the event his attention was entirely directed elsewhere; in such a case the above assumption is erroneous.

X is sitting in a tavern, wholly absorbed in playing cards with cronies. At the next table, which faces X, a fight starts which culminates in stabbing. In court X must testify as to which of the men at the next table first drew a knife. Since X is unable to do so the examining magistrate says: "But you were right there and the incident took place in plain view; you *must* have seen it." The magistrate deludes himself. In a purely physiological sense the events may have been registered in fact upon X's retina, in spite of which he saw nothing. For his attention, directed wholly upon the cards, made him literally blind to everything else. And if the angry magistrate taunts him with "You weren't asleep, were you?" X might reply, "At least for *those* impressions I was in a

¹This polarity is related to that other which we described (p. 472) as the contrast between especially intense awareness and unconsciousness.

partial sleep since my waking consciousness was occupied altogether with other impressions and actions.”¹

The state of “inattention” may occur in two *entirely different* forms, that of “diversion,” just described, and that of *distraction*.² This second form appears, for instance, when one lies on the beach and permits impressions and ideas to flit past, yielding passively and diverting to *none* of them sufficient energy for a true “performance.”

Viewed from without, both forms may appear very similar, a fact which makes for fatal confusion in some circumstances. A teacher notices that a pupil is paying no attention to the school subjects, is startled when called upon, and gapes at him absently. He calls this pupil “distracted.” But is his energy really scattered, without structure, so that there is not enough of it for anything? Or may not the boy be perhaps in a state of strongest concentration of attention—to the pirate story under the desk—so that he has no attention left over for the lesson? To the objective attitude of the teacher both cases seem identical as refusals to comply with the demands of instruction; but if the personal significance of the two modes of inattention is taken into account, they are thrown into sharp contrast. In the diverted state there is a strictly governed, even *autocratic* structure to attention; in genuine distraction the state is *anarchistic*. One who inclines by disposition to the first form will, if the demands placed upon his performance agree with his spontaneous interests, summon an especially high degree of concentration and consequently justify positive expectations of performance. The really “distracted” individual, however, as long as the state obtains, shows small promise of achievement. If the state seems constitutional, the individual never being able to devote the necessary concentration of attention to his tasks is to be regarded as mentally abnormal.

Between the two limiting cases here described, of autocratic and anarchic distribution of energy, there are innumerable gradations. In the life of every man states of greater attentiveness alternate with those of flagging attention. External demands determine differences in concentration, with respect both to intensity and extensity. Concentration is the more intense in proportion to the difficulty of the task. Self-aspiration is likewise greater; the marshalling of the largest possible portion of the total energy available for a task is possible only with strong inhibition of other disposition of energy. If, for example, a sequence of visual processes is attentively observed, far greater concentration is required for small stimulus values and liminal differences than for clearly perceptible and distinguishable impressions.

¹ Cf. p. 259.

² Ribot was aware of this distinction, between *distract dissipé* and *distract absorbé*.

2. THE FIELD OF ATTENTION

Since the sphere of operation of any act of attention is *delimited* from the rest of personal activity, the graphic term "field of attention" may be applied to it. This field of attention is always both an *object-field* and a *field of force*.

The first structural principle is found in the *polarity* pointed out above, of intensity and extensity. A wider range of the object domain signifies that awareness and force cannot be focussed so intensively as in the case of a narrowed field. This relation appears very plainly in the shifting of the range of the field. I am standing on a mountain and looking at the countryside. As long as I view the scene *as a whole*, no matter how great my concentration, the individual parts of the scene will be viewed with lessened energy and will arouse but a mediocre degree of awareness. Now I shift my "inner direction" of regard; I seek out and find, at a spot lying deep in the valley, the house in which I live and the window of my room. Suddenly all the energy becomes focussed upon this point, and everything else recedes into the zone of "partial sleep"; now details of the tiny object of attention become conscious, which in the earlier total survey of the scene were well below the threshold.

A second structural principle is that of a *throwing into relief*; even *within* the domain that is accessible to attention, not all portions are equally charged with awareness and energy, but stand in a graduated interrelationship. Throwing into relief is ordinarily "concentric";¹ zones of lesser intensity are formed around a particularly brilliantly illuminated and powerfully accented center.²

In the actual focus of the driver's attention lies the stretch immediately in front of him, with the obstacles that he must avoid. In the margin of the field are the edges of the street, intersections to right and left from which disturbing factors *might* suddenly emerge, the sound of the motor, the instrument board, etc.

There is an attentional set in which the true, sharply salient focal "point" is lacking; in lieu of this the marginal field of regard, as the *possible region of the focus to be determined*, draws upon the energy in a more random manner. This set is the basis for such activities as waiting, seeking, lurking, spying, and reconnoitering. The actual object of attention is not as yet present; the place and even the nature of the object are in question. This very indefiniteness requires constant scanning of a broader field in order not to lose the object as it appears. This distinction is also plain in terms of inner ex-

¹ In this normal case the term "concentration" thus has double meaning.

² Wundt distinguished "point of regard" and "field of regard" for attention.

perience; the instant that which is expected or sought after materializes, the vague and roving tension turns into focussed and fixed concentration.

Concentric attention might be called "unifocal" attention, by way of emphasizing the *one* dominant focus. The field may also have the formation of two or more focal points ("bifocal" or "multifocal" attention). This may occur in two chief forms; either the foci of attention are part of one complex total activity ("distributed attention"), or two different activities, independent of each other, are simultaneously prosecuted. ("splitting of attention," "multiple action"¹).

Examples of the first form: The chauffeur who must avoid an approaching car and at the same time miss a child that darts suddenly into the street; the pianist who must simultaneously watch the various movements of his right and left hands, on playing a difficult piano piece for the first time.

Examples of the second form: The schoolboy mentioned above, who reads his book of thrillers under the desk during class, need not be wholly diverted from the classwork; in that case he carries out a "multiple act" in that he devotes some modicum of attention to the lessons, allowing him to pick up the thread when demanded. Here too are classed those people who are equipped to continue writing a letter to X during a telephone conversation with Y.

Speculative theorists were formerly greatly bewildered by the ability to divide attention, since these phenomena seemed to contradict the assumed simplicity of the mind and unity of consciousness. A way out of the difficulty was occasionally sought in the supposition that the *simultaneity* of the various performances was delusory; at any instant the mind is able to concentrate upon one of them alone, but can shift from one set to a different one in the least space of time, this oscillation having the appearance of simultaneity.

This difficulty does not exist for personalistic psychology. Since the totality of the person is always and everywhere an *unitas multiplex*, there is no contradiction between plural sets or foci of energy on the one hand and personal unity on the other. From this point of view must we rather inquire *how* the plurality fits into the whole.

In the first (distributive) form the *meaning of the complex task* provides its own total background for the distribution of attention. In this kind of performance each partial aspect acquires from the whole not only its meaning, but also its portion of energy; the field shows forth two or more peaks in outline. These peaks, moreover, are super- and subordinated to one another in a meaningful manner. Thus in playing the piano the right hand usually does the "leading"

¹ In German, *Mehrzahl-Handlung*.

while the left "accompanies"; if in the middle of the piece the left must take over the leading of the melody, there is displacement in the profile of attention.

The structure of the attentional field is arranged differently in true *splitting* of attention. The meanings of the performances, which crop up simultaneously in attention, are now disparate; no unity of texture may result from them. If nevertheless no actual disruption ensues, it is because the total person asserts his unity through the ordering and stratification of the functions. Simultaneous performances stem from different depths of the person; while one task employs central forces, another receives a more superficial activation. The way in which the distribution of energy is organized for a dual action is likewise a product of personal unity.

The oscillation theory mentioned above finds here some partial substantiation. In the carrying on of two or more coexisting functions, the *peaks* fluctuate in height; momentary abatement of force in one function is exploited to lend dynamic emphasis to another. See the man who attends to his correspondence *even while* telephoning, though he does not interrupt his writing when he is speaking: he organizes the dual action so that the new ideational formations which are to furnish written material for a few seconds at a time and which require special pointing of attention, are formulated chiefly at those times when the telephone conversation requires less active attention, and conversely.

3. MODES OF PAYING ATTENTION

With respect to the time involved, *momentary* and *protracted* attention may be distinguished, although the border line is by no means stable. When a poster on a billboard attracts my notice, when I hunt for a key on my key-ring, when a pupil who is called on replies to the teacher's question, concentrated attention is needed which, though lasting a certain length of time, is fulfilled entirely in the brief *present*. But when one is listening to a lecture, or when the sailor posted as lookout must watch the sea for hours upon end, or when a pupil writes down what the teacher dictates, what is required is no single act of attention but a more protracted setting of attention. In either case the rule holds, that energy follows a wave-form.

In a momentary act of attention there is but *one wave*. If attention, previously elsewhere occupied, is momentarily required, it does not attain full intensity at once; rather is there a noticeable although brief period of increase, the culmination being reached with attainment of the goal, with more or less rapid diminution thereafter. This curve may sometimes be plainly noticeable in a class at school.

If an inattentive pupil is suddenly called on, his consciousness needs a little time to work up to the degree of concentration needed for finding and formulating the answer. When he has answered, the pupil is held energized for a few seconds more before he sinks back into his dreams.

Contrariwise, protracted attention always has a *periodic* structure. If the individual devotes himself uninterruptedly to some activity for a considerable time, there is never a constant flow of energy at the same level, but a series of culminations a few seconds apart, separated by more or less deep drops of attention.

Hold a watch at that distance from the ear where the ticking is just inaudible. On listening long enough, there are fluctuating moments: the ticking disappears, returns again from nowhere, dies away again, etc. The degree of attention required by stimuli near the threshold of perception cannot be maintained uninterruptedly.

Bring the watch closer to the ear so that its ticking is always audible; it will be perceived in varying intensity. What is more, we are under compulsion to form temporal patterns of its rhythm, with accented and unaccented beats; i.e., the ticks are alternately received with greater and lesser degrees of attentional energy.

This experiment also teaches that the person himself has a certain freedom in distributing the energy. One is able to hear the succession of equal ticks in $2/4$ time, $3/4$ time, $4/4$ time, $6/8$ time, and to shift these various times at will, although nothing about the objective stimulus is altered. The formation of subjective periods may be so insistent that one is firmly convinced that one hears the beats in objectively differing intensity.

This compulsion for periodicity may also have an effect upon actual objective arrangements, especially in any case where culture is involved in temporal patterns of brief duration. The alternation of accented and unaccented syllables in speech, like that of strong and faint beats in music, is closely correlated with the alternation of peaks and drops of attention.

III. EXTERNAL AND INTERNAL CONDITIONS OF ATTENTION

I. REACTIVE AND SPONTANEOUS ATTENTION

The conditions for the onset and prosecution of acts of attention are subject to the principle of convergence. The environmental factor is of most marked effect in what is called *sensory* attention, the occasion here being external stimuli of a striking sort. The noise of an approaching airplane, the leaping of a skyrocket, the smell of something burning, have a compelling power of attraction; it is nearly impossible to escape them. Even here, however, the subjective participation of the person must not be disregarded.

However inevitable may be the compulsion to respond to the striking stimulus, the fact that the response is a matter of *attention* is internally conditioned.

For example, the evening sky is overspread with a strong fiery glow. Different people would respond quite differently to this. A nervous child, becoming terrified, begins to scream and runs away. The warden automatically grabs the bell rope from habit without having first to assure himself that it is a fire. An aesthete is thrilled by the beautiful play of color. None of this is "attention." Attention occurs only when someone is moved by the visual impression to concentrate his energy upon consciously defining the objective "fiery glow" as to nature, extent, place of origin, etc. The stimulus is responded to with an act of will which intends an act of knowing.

It is evident from this that the customary division by usage of language into "involuntary" attention and "voluntary" attention does not fit the facts, since the will can never fail to function in any act of attending. But the *claim* upon attention can lie outside of or within the will; in the former case the act of attending is a *reactive*, in the latter a *spontaneous* act of will. An attempt to solve a mathematical problem, instigated by some inner urge, bespeaks a "voluntary" incentive to "spontaneous" attention. When the course of the work is interrupted by the ringing of the telephone, and the person working *permits* the interruption and turns to listen, a claim is placed upon the will and a reactive act of attention occurs.

The commencement of a reactive act of attention is accordingly always of dual significance; it consists in drawing the attention not only *to* the sensory stimulus, but also *away from* the previous mental state. With the stimulus which imposes itself upon attention there begins a new event; the steady discharge of personal activity comes abruptly to a stop. If this discharge was in some way pleasant or not yet completed, the interruption is experienced as a *disturbance*. If the previous state itself consisted of attending, the insistent stimulus has a *diverting* effect. Then the general state of energy tension, essential to *all* attention, continues to exist, the object changing in accordance with the external occasion.

When is a stimulus so commanding that it becomes a disturbing or diverting stimulus? The old elementaristic psychology regarded "obtrusiveness" as an attribute of the particular stimulus itself, emphasizing the close relation between it and stimulus intensity or change of stimulus. It is certainly true that a sharp detonation will stimulate attention sooner than a gentle sound, or a dazzling lightning flash sooner than the weak flaring of a match. But some familiar examples show how little this touches the essence of "obtrusiveness."¹

¹ Cf. the corresponding examples of the effectiveness of *waking* stimuli, p. 343.

The soldier in the trenches, having ceased to heed the roaring of the cannon, does heed the word of command, which is of far less auditory intensity. The soft whimpering of her baby in the next room is a very strong diverting stimulus to the young mother, while the loud crying of a strange child does not affect her attention, etc. The "obtrusiveness" of a stimulus is consequently dependent above all upon its *personal relevance*; according to the part played by the stimulus in the personal life, it exercises greater or lesser attraction over attention. Now a strong stimulus is quite frequently of greater personal relevance than a weaker one. And a stimulus that enters the field of regard for the very first time can acquire importance for life by virtue of its novelty sooner than one that is preserved unchanged. Thus strength and change of stimulus are correlated to a certain degree with obtrusiveness.

The selection of objects that is carried on by attention consequently depends primarily upon the personal *disposition* that strives for the clarification of definite objects. Such a disposition is called an *interest*.¹ The connection between interests and attention is extremely intimate; there is no such thing as attention entirely bereft of interest. At most, direct and indirect interests may be distinguished. In the former case the object of interest and that of attention are identical from the outset, as when someone who is strongly interested in mathematics works at mathematical problems with close attention for just that reason. In the case of indirect interest, the object of attention is different from the object of genuine interest, but is related to it by dependence, as when a pupil concentrates energetically upon his mathematics problems because he has intense interest in passing the examination, his interest in mathematics being very slight. The first instance represents the favorable conditions for a rewarding and less tiring functioning of attention. With merely indirect interest it is necessary to expend energy for the special purpose of overcoming resistance to the actually uninteresting object.

2. CONSTANCY AND SHIFTING OF ATTENTION

In states of attention that attach to longer periods of time, objective content may show a great monotony or a great variety, with countless intermediate gradations. We mention only two limiting cases; the task of a beginner in school, who must fill a whole page of his notebook with the same letter *i*, is completely uniform; constantly shifting is the activity of the agent in an information booth, who is confronted with different inquiries every minute. Such extreme situations place severe demands upon the attention. The *uniform* sequence easily

¹ Cf. p. 571.

degenerates into purely mechanical action; attention "falls asleep" because it lacks any sign of tension. The entirely *disparate* sequence on the contrary demands uninterrupted rapid shifting of attentional set, preventing any fixing upon the object comprehended or penetration into it, breaking up the course of life into disconnected segments.

The difference is made clearly manifest by two familiar experimental methods. Since Kraepelin introduced so-called *method of continuous work*¹ for purposes of psychological investigation, monotonous series of stimuli have often been employed. Kraepelin preferred the use of tasks of calculation which had to be similar to one another because the performances achieved in different stretches of time were to be compared with one another (e.g., addition of one-digit numbers). For testing attention the *cancellation test*, introduced especially by Bourdon, has been widely used; in a printed text certain letters, such as all *ls*, *rs*, and *ns*, are to be cancelled. The number of letters cancelled in a certain time furnish a measure for the speed of attentive activity; the number of mistakes (letters missed and wrong cancellations), a measure of the intensity of attention; unequal distribution of mistakes in different portions of the work, an insight into the fluctuations of attention. The task is highly monotonous but not to such an extent that it can become completely mechanized; every let-up in attention takes revenge immediately in the missing of letters that should be cancelled. Other experimental tasks, especially psychotechnical, are patterned after the monotonous industrial work on the conveyer, as for instance the experiments with the *monotony apparatus* of Wunderlich.

At the other pole are the test-batteries which have been employed, first in the United States and elsewhere as well. A booklet contains tasks and directions of the most varied sort to be carried out in writing; only a few seconds are allowed for each task, and when they have passed the next must be taken up. These test booklets are intended for tests of "intelligence," but in reality completion of them depends not only upon the capacity to jump intellectual hurdles, but also upon the ability to keep shifting the attention throughout a disconnected series.

The *objectively* most suitable prerequisite for the protracted setting of attention is evidently provided by those serial tasks which are neither monotonous nor too varied. The optimal conditions may be of two kinds.

(1) While continuous work imposes a generic uniformity, the task may require some specific shift of set for each particular act of attention.

One example is the transformation of Bourdon's cancellation test by Sterzinger into a "test of *abstract* attention." It is not definite, always *identical* letters that are to be cancelled, but those letters which follow some *rule*; first, every letter standing alone between two vowels, secondly,

¹ *Forläufende Arbeits-Methoden.*

every letter that follows the same letter, thirdly, every two-letter group that is preceded by a group constructed in the same manner.

Many of the intelligence tests also belong here; thus the "analogy test" (p. 314) calls for the fourth word which makes sense in connection with the three given words. Each set of three words is different, but all fall under the same rule. The scope of this procedure is so wide that attention must be alert. It is impossible to mechanize the activity.

(2) Continuous work is held together by a *total meaning* and by the goal to be attained; the individual steps leading to the goal, however, are different. In this class belong technical tasks of production, of graphic or plastic copying, the working of a mathematical problem whose solution requires a number of stages, etc. The objective incitement for sustained attention is greater than in the first kind of condition, for the connected meaning of the total task activates deeper strata of the person, like thought, interest, affection, and thereby sustains the more protracted concentration of energy.

The difference between constancy and shifting may also be primarily *subjectively* conditioned. Here attention becomes "riveted" to an object so that it cannot be released from it for some time; or the individual feels induced to change from one focus of attention to another. Both procedures are possible with the same objective conditions. An object at rest, e.g., a painting rich in design, may be regarded with "riveted" attention, which sticks to the whole or on a detail; or with "wandering" attention, which runs through the details in succession, or passes away entirely from the picture to quite other objects. Conversely, a moving series of stimuli, e.g., the content of reading, may so operate that one reads on mechanically while still mentally absorbed by a certain place; or attention may wander with the changing thoughts and events in the text.

IV. ON THE DIFFERENTIAL PSYCHOLOGY OF ATTENTION

I. DIFFERENCES IN THE DIRECTION OF ATTENTION

People may prefer different objective domains of attention. Thus there are people of an expressly sensory attentional type, and others whose attention favors thought problems or the analysis of inner experiences. These important differences do not actually refer primarily to attention as such; rather is the favored direction of attention to be related to deeper personal directional dispositions; to interests, impulsive tendencies, special bents, etc.

This ever-present object-bound predilection of attentional disposition must never be forgotten in making personal diagnoses. Attention is never such an exclusively *formal* factor that it can be uniformly revealed by any sort of material.

This raises criticism of most testing procedures; the task as such (e.g., cancellation of letters) almost never arouses direct interest; the meager indirect interest of doing well on the test provides the impulsion for attention. Consequently it is always possible that an individual tested in this way would show quite different activity of attention if he could focus it spontaneously upon objects of his direct interest.

On the other hand it must of course be realized that even in every day life everybody is set tasks of no direct interest but on which attention *must* be concentrated; the testing procedures mentioned here might naturally yield important indications for *such* performances.

It is consequently essential to employ two kinds of tests in testing attention in psychodiagnostics; those that arouse merely indirect interest, and those taken from the most intimate sphere of the individual's interests. Only with the latter can he bring out his actual *optimum* of attention.

2. DYNAMIC TYPES

All the dynamic features that we discussed earlier are capable of becoming characteristic qualities of the personality and thus of leading to typological differences. A crucial determinant is whether the individual is inclined to distribute energy intensively rather than extensively.

The true "concentrating" type usually has a small, almost punctiform, but all the more brightly illuminated field of attention, while everything else retires into the penumbra of disregard. This type occurs for lengthy periods as the "fixating" type, which bespeaks a tightly riveted attention. The brooding thinker is a characteristic example.

The exact opposite is furnished in the type, previously discussed (p. 477), of "genuine distraction," in which the scattering of energy is so extensive that true concentration of attention becomes an utter impossibility.

In between is the "distributive" type. The field of attention here has a wider scope, but with adequate internal structuration and supply of energy; and attention is versatile and flexible, though easily diverted, without degenerating into chaotic veering. To this type usually belong people who are extraverted toward the world.

While the type of "genuine distraction" is certainly inadequate and frequently frankly abnormal, it is impossible to rank the other two types in terms of value. Popular psychology is inclined to do this, praising the endurance, depth, and tenacity of "concentrating," while deplored the inconstancy, superficiality, and divertibility of "distributive" people. But such characterizations are one-sided and based on arbitrary external standards. Life demands both focus and

scope, riveting and wandering, of attention, divertibility, and resistance to diversion. It would have been better for the highly concentrating Archimedes had he been capable of being diverted from his mathematical porings by the approaching noise of battle; instead of this he regarded the intruding warriors only as unpleasant disturbers of his circles—and he was slain. A driver who could not distribute his attention to a high degree, and who did not allow himself to be diverted by every new object appearing in his field of regard from his previous attentional set, would be utterly unqualified for his work.

The more advancing civilization places the individual amid a confusing and continually changing mass of events and objects which may become of significance for his life and consequently demand his attention—the more need he has of the distributive and shifting capacity of this attention; otherwise he goes under. On the other hand, all those tasks which are not dependent upon the momentary situation, that is, scientific and artistic performance, religious absorption, ordering and planning, these, of course, demand an ability to shut oneself off temporarily from the wide reach of shifting stimuli; that is, heightened concentration. Not only leaders, but average people, who have to carry out in a relatively uniform manner a limited series of performances (the farmer, the industrial worker, the small clerk), would find little advantage in too distributive a form of attention.

CHAPTER XXVII

PRACTICE AND FATIGUE

We must now discuss those modifications of performance which occur in specific domains of activity; practice and fatigue. Here too, as everywhere else in life, external and internal conditions operate in convergence, the external conditions, however, now assuming precedence.

I. PRACTICE

I. MATURATION, PRACTICE, AND SET

First a word is needed concerning the participation of the internal factor in increasing performance, i.e., maturation. Performances within definite areas that previously could not be accomplished at all or only in a very rudimentary way become capable more or less suddenly of being suitably carried out because the corresponding capacity and readiness for performance reaches maturity. The external conditions of progress in performance can be successfully established only on the basis of maturing predispositions. Very often long and energy-wasting practice in itself results in meager progress (e.g., in mathematical or grammatical drill with school children) as long as maturation is insufficient; but when it comes to a head, further practice and learning become unexpectedly and abruptly effective, enabling rapid progress to be made.

The maturation of performance naturally plays an especially large part in childhood and adolescence, but it is not lacking with adults. This is true particularly of the *creative* performance of artists, scholars, etc. In genius, the great productive capacity is but remotely dependent upon external conditions, being most properly a matter of the laws of internal development.

Géza Révész made an investigation of the time at which talents of a high order matured. He found that on the average musical and mathematical talents are manifested earliest, and literary talent latest.

Practice is increase of specific performance by intentional repetition of functioning. The term is applied both to the repeated *activity* for which accomplishment is increased and to the high *state* of profi-

ciency attained. Moreover, "practice" must be distinguished from "set."

If new activity is commenced, the individual at first has no "set" for it. His bodily bearing, his attention, his interest, his disposition of energy, in short, the total person, is directed upon a different goal. All these factors must now be redirected; the whole person-world relation must be displaced in order to bring the new aim into the center of personal activity. This does not happen all at once; on the contrary, the total set is achieved but gradually. This process is bolstered up by repetition; yet it is not "practice" in a precise sense, although performance is augmented during its course. It is often asserted of people who have to carry out some smoothly uniform activity that they must "hit their stride"; the pianist and the typist must get their work "back into their fingers again," etc.

Intellectual workers have an especially vivid sense of these initial restraints; these not only hamper the resolve to resume the interrupted work, but continue in effect during the initial phase of its resumption, which is very gradual.

True *practice along specific lines* goes into effect only when a total set is achieved for the task. At this point continued repetition exerts its special effect on both components of the performance; all practice is designed to increase *proficiency* while diminishing its *cost*. In comparison with the practiced bicyclist, the beginner not only rides more hesitantly, more slowly, and less gracefully, with more frequent mistakes and blunders, but he also makes many more superfluous movements with all his limbs, uses more muscular effort, and must devote more attention and will power to his acts than the accomplished rider.¹

It is curious that a certain paradox obtains between the two sides of the effect of practice. While the aim of increasing one's proficiency thrusts the activity into the foreground of personal life and makes it increasingly *salient* in contrast with every day functioning, reduction of effort signifies progressive *embedding* of the action in the total life, and a diminishing drain upon the total energy. In the one case the import of the performance, in the other, its naturalness, is heightened; on the one hand awareness of it is especially emphasized, on the other, it is thrust more and more into subconsciousness.

This paradox, however, signifies not incompatibility, but simply a changed emphasis. In practice with every day activities the outcome is the attainment of an easy precision which no longer requires much energy and awareness for purely technical execution. Energy

¹ In the language employed above (p. 461), practice augments objective performance while diminishing personal performance.

is thereby released for other activities. One who is practiced in the use of a foreign language no longer finds it necessary to concentrate upon words and grammatical forms, but is able to put speech at the service of activities of other kinds, sociability, occupation, science, etc. One who is practiced in typing can even transcribe complicated thinking immediately into writing, since the writing itself has become *mechanical*. It is different with practice in *sports*. Here performance is not transformed through practice into a subordinate auxiliary performance, but remains the true *goal* as such, and becomes constantly more of a conscious one as to details and standards. Yet mastery becomes possible only through considerable mechanization of all the contingent actions.

2. IMMEDIATE AND PROTRACTED PRACTICE

“Immediate” practice takes place within *one* continuous stint of work; it is the immediate continuation of the set described above. In general, after the first quarter or half hour of some smoothly uniform activity of a manual sort (e.g., stringing beads, putting letters in envelopes) or of an intellectual kind (calculating, checking, arranging), the work will go more quickly and with fewer mistakes than at its commencement. The more unaccustomed the activity is, the more marked is progress in the first stages. The simple rise of the performance curve will of course be retarded (the more so, the longer the activity continues) by the counteracting effect of fatigue, which we shall discuss later on. In consequence of this, the “work curve” is not a pure practice curve, but a resultant of the curves for practice and fatigue.

The practice effect is more plainly manifest in *protracted* practice. When the individual “practices” anything, it is not in order to increase the performance during the next few hours, but in order to achieve lasting proficiency. After practicing, the individual may do anything else, letting hours, days, or weeks go by; when he resumes the previous activity, previous practice will bear fruit and accelerate and improve further performance. This process may be constantly repeated; from the practice effect of individual periods there results a total effect which finally reaches maximal facility.

The curve for protracted practice of this sort may be demonstrated for the most diverse kinds of performance. When typing is being learned, for example, it can be determined at the end of each day of practice how many words are written a minute; these figures, arranged serially and represented graphically, form the practice curve. Its basic schematic form is illustrated in Fig. 19. This gives the following information: (1) “Improvement” is unequal; there are alternating periods of rapid and slower progress (including plateaus). (2) At

the commencement of practice the average improvement is greater than it is later on. (3) The curve at last becomes nearly horizontal; any amount of continued practice results in but negligible increase in proficiency.

As for (1), the irregularity of the practice curve is a special form of the periodical energy economy of the course of life, which was mentioned above. In every extended practice period there are numerous "dead points"; the learner notices little or no improvement and begins to doubt the wisdom of continuing the practice. But after some days or weeks this check is suddenly overcome, and a new period of greater proficiency follows. At times, even temporary suspension of practice may have a favorable effect, allowing a phase of satiation (see p. 506) to die out. This is described as a "creative pause."

Points (2) and (3), if one disregards minute irregularities in the curve, may be expressed in other terms: If protracted practice extends over a long series of repetitions, the effect of each repetition on the whole is the smaller, on the average, the higher its place in the series of repetitions. The 100th repetition thus yields a much smaller increment to the level of proficiency previously attained than did the 50th, etc.

This principle is already familiar to us. We encountered it earlier¹ as a general law of mnemonic functioning, and mentioned its further application to the acquisition of knowledge. Here it refers to the attainment of *proficiency* through repetition. Its practical significance is obvious: For every individual, with respect to every exercisable activity, there comes a time when the level of performance has been so materially raised on the basis of mere practice that the further increase in proficiency yet attainable by continued practice virtually does not pay in proportion to the time and energy that would have to be devoted to it. Practice may become extravagant and un-economical.

Nevertheless, repetitions continued after the high level of proficiency has been attained are not without significance. They contribute to maintenance of the practice level, and to warding off threatened losses. The most practiced piano virtuoso deems it necessary to exercise daily to keep his fingers at the maximum of flexibility.

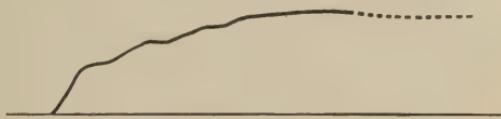


FIG. 19. CURVE SHOWING PROGRESS WITH PRACTICE.

¹ See p. 191 and p. 243.

Practice in athletics reveals the importance of the distinction between objective performance and personal performance. *Objectively* it is of no consequence that an highly practiced runner finishes the 1000-meter run one second faster than his record; and in objective concerns of practical life it would be absurd to waste any great amount of time and trouble on practice in order to force this trifling gain in performance. But as a *personal* performance even the most minute raising of the record may prove important, precisely because it can be achieved only through the most pointed concentration of energy and the sternest straining of will. It signifies enhancement of the self through aspiration.

This gives rise, of course, to the possibility that the time and energy that are devoted to such training will be taken away from other worthwhile spheres of activity. For the person as *unitas multiplex*, attainment of a high level of proficiency in any area should serve as a sign that the energy previously devoted to this specific practice is now available for other personal life functions. In other words, raising "maximal" proficiency in athletics to infinity, considering the quite infinitesimal possibilities of improvement, involves the danger of becoming very one-sided.

Increase in performance through repetition has its counterpart in diminishing of performance through not practicing the activity. Proficiency once acquired as a potential state is not simply retained while one is otherwise occupied; on the contrary, the readiness and capacity for re-actualization diminishes in proportion to the length of the lapse. If the activity is then taken up again, *loss of practice* becomes noticeable. This holds on a small scale as well as a large.

On the small scale, if through practice in typing on Monday, a definite speed in writing has been attained at the close of the practice period, the writing on Tuesday ordinarily will not be so rapid at the beginning of the new period. The difference, which may be exactly measured, furnishes the "loss of practice." Ordinarily, to be sure, this loss of practice will not only be regained in the course of the work on Tuesday, but will also be turned into a gain, so that the final performance on Tuesday is greater than that on Monday.

On a large scale, if an activity is returned to after an interruption lasting a year or several years, a high degree of proficiency having previously been attained (as in skating, playing the piano, speaking a foreign language, etc.), there is at first the painful impression of having forgotten everything. The practice loss appears large. But it soon becomes evident that it was more a loss of "set" than of actual practice. Once the inner mental and physical total setting is recovered, which corresponds to the "old-new activity," the after-effect of previous practice soon comes into play; and it is astonishing "how quickly it all comes back." Now whether the old level of performance is altogether regained (or indeed, surpassed), depends upon the varied personal and external conditions, which need not

have anything directly to do with practice. An older man, taking up a sport in which he shone as a youth, no longer possesses the energy that would enable him to attain his old level of performance.

The same thing appears to hold true for learning by heart (see p. 246); the mnemonic effect of previous acquisition is not completely lost. Even latent periods lasting many decades do not altogether kill off that unconscious mneme which was produced by former practice periods. However foreign the activity may be deemed at first, however awkwardly one may at first approach it; even for the graybeard remnants will gradually come to life of old accomplishments that he acquired as a youngster and had not used all that time.

3. TRANSFER

Heretofore we have discussed practice only in so far as it brings about *specific* improvement in performance in the specific domain of the activity repeated. But this splitting off of one area of performance in such a way that all effects occur exclusively within its borders is impossible within the unified person; whatever happens in the specific domain of performance radiates to other reaches of the person. Hence there also exists *radial practice*, usually called "transfer."¹

The radial effect of practice embraces primarily those areas of performance which are especially close to the primary area, whether by utilization of the same mechanisms or one that is related. One who has practiced delicate coördination of finger movements as a watchmaker will profit by this practice when called upon to function in some other line of precision mechanics, even though the movements there required may be of a different kind. One who has had practice with the principles of arithmetic and geometry on the level of abstract mathematical thought is thereby better prepared for understanding the figures of logical syllogisms; transfer is effected from mathematics to logic.

Ernst Meumann obtained the following results from investigations of memory: He had several subjects learn series of nonsense syllables for 36 days and thereby produced high proficiency for this specific performance. (During the first few days a series of 10 items had to be read 25 times; on the last day a series of equal length required but five readings.) Besides this, he also used other kinds of material (poems, series of digits, etc.) on the *first* and *last* days, but not in between. With this material too, the performance on the last day was noticeably better, although there had been no practice in it! Through daily learning of series of syllables the related learning of digits, etc. had been affected by "transfer."

¹ *Mitübung*. See p. 192.

Many American psychologists and educators who do not believe in the existence of transfer of training base their opposition on experiments initiated by Thorndike and Woodworth at the beginning of the century and taken up by many followers. Thorndike¹ established a theory of "identical elements" that runs as follows: "A change in one mental function changes any other only in so far as the two have as factors *identical elements*." But this elementaristic doctrine proves true chiefly when the deeper strata of the person are not involved in the process of training. Thus many other investigations not limited to artificial and uninteresting topics of practice, but dealing with true scholastic subjects, led to quite divergent results. Experimenting with geometry tests, and training the pupils consciously to use a technique of logical thinking in solving them, Elsie P. Johnstone demonstrated that this training "carried over these methods of attack and these attitudes to other problem situations not concerned with geometry."²

The irradiation of practice from the right hand to the left is especially striking. Although most people complain that their left hand is far less skillful than the right because of lack of exercise, this clumsiness would be still greater if the two hands did not reciprocate dynamically. It is clear, on being prevented temporarily or permanently from using the right hand, and on having to resort to the left, that the latter has taken up much *potential* facility from the right. Consider what it means for a member of the body that was *never* practiced in writing or drawing suddenly, however clumsily, to be able to write or draw! And the perfecting of this capacity for performance, when directly practiced, proceeds more rapidly than would ever be possible with an entirely unexercised organ.

But at bottom this transfer is not so much a matter of the jumping of practice effect from one part of the person to another; rather is the *whole* person caught up in the effects of practice so that he is able to prosecute the newly acquired ability with the regions most suitable at the time. The concept of "transfer" thus leads us to that of "formal discipline" or "formal training." All specific practice produces a *general* readiness and increase in capacity for performance and for modes of behavior that show an inner relationship with the area of practice.

The following passage deserves literal quotation since the author (H. R. Hamley) points to this personalistic basis of transfer without knowing anything about personalistics: "Transfer may best be defined as 'communication.' Transfer of training is not merely the communication

¹ In his *Educational Psychology*, 1903. G. Allport's *Personality* contains an excellent criticism.

² Cf. the survey given by Hamley.

of knowledge or ideas; it is the communication of life, of knowledge and ideas suffused with life. It is not simply a process; it is a living process the ultimate end or meaning of which is a richer mental life."

Transfer of training is of course *graduated* to the inner relationship. Thus maximal exercising of the watchmaker's fingers will be of far greater effect in other mechanical skills of this sort than, say, in increasing dexterity of arms and legs in athletics. Constant practice in mathematical thinking has more transfer effect upon the efficiency of thought processes in symbolic logic; logic of a quite different sort, such as that embodied in grammatical categories, will be but little affected by it.

The outcome may even be a phenomenon that is the opposite of transfer; interference with performance in the alien area. A disaster of this kind is the more likely to occur the more completely exercise is fixed as to *content*. Consequently we often find, where talent is limited, a fading of those activities which lie outside of the region of interest and practice.

4. EXERCISABILITY AND THE CAPACITY FOR PRACTICE

a. There is scarcely any personal activity that cannot be improved through practice as to grade of performance, or depreciated through lack of practice. But the degree of possible perfection through practice ("exercisability") varies greatly for different functions.

Exercisability is relatively meager for those functions which are close to the vital basis of activity. And normally they require very little true "exercise." Breathing, eating, etc. are activities in which efficiency precedes all possible exercise, and which function properly without specially directed settings-of-will, their basis of operation being primarily in the sphere of impulse and instinct.

On the other hand, those functions require exercise which constitute the cultural superstructure of human life and are acquired only by experience, technique, instruction, etc.

The normal individual takes to walking and to the necessary mastery of his mother tongue without there being any need for special "practice" in walking or talking; but conscious and deliberate practice is the rule with skating and adopting a foreign language. Whereas skill in performance must first be *produced* by practice in cultural domains, facility is already present in vital functioning and can at best be *modified* by practice. Consequently exercise in this sphere takes on very peculiar forms.

In the first place, the exercise of *substitute functions* occurs where the exercise of normal vital processes is prevented, as in sensory and motor defects. The blind person must learn by practice to get around

in the world, to walk alone, to identify objects by delicate feeling; the deaf and dumb must devote untold energy to lip reading. It is similarly true for those with amputated arms and legs, for cripples, etc. They must acquire substitute actions for those normal actions which required no practice.

Such practice is especially important in cases of very great defects; Helen Keller, deaf and blind, learned first the finger language and later oral speech by incessant practice; the artist Unthan, born armless, led a life that involved much successful practice of actions that the individual possessing arms learns as a matter of course, i.e., without dint of practice (the use of the spoon, washing oneself, etc.).

The surprisingly great success of such substitutionary practice may be comprehended only through the fact that a vital *need*, on encountering blocking of the normal path to fulfilment, establishes another path by which fulfilment may be obtained.

A second sort of exercise of this order pertains to the *repression* of these vital needs. When it is desired *not* to exercise functions that proceed of their own accord without requiring practice, the inhibiting of them must be deliberately practiced. This is the most difficult of all kinds of practice, since it is no longer sustained by the tendency of a natural need but on the contrary opposes the need through voluntary inhibition. It is indulged in by those who starve themselves, notably by penitents and fakirs; they also practice holding the breath, not responding to pain, sitting or standing motionless (pillar saints), etc., successfully achieving the repression of needs. But on closer examination of such practices, counter to vital demands, it becomes evident that it is not really a matter of specifically inhibiting this or that vital function (breathing in itself is no worthy object of repression), but rather of victory of deliberate control over the need for exercise of functions. At bottom it is a *formal practice of willing*; and in fact, in the discipline of various monastic orders, for example, this is expressly prescribed as the true aim. Here it is general dominion by introceptive will over the activity of vital impulses.

Consequently systematic practice applies properly to purely vital domains only in abnormal cases. In those domains which are culturally conditioned, however, and which evince and require discipline, there is always a more or less strong *incidence of vital activity* which sets limits upon exercisability. Thus we have already mentioned that in musical cultivation, facility for rhythm is open to practice less than is melody; this fact we ascribed to the stronger vital attachment of rhythm. Likewise in learning a foreign language, vocabulary, grammar, syntax, etc. are open to practice far more than are capacity

for expression, tempo of speech, shadings of voice, because these latter features demand many more innate abilities in connection with the new verbal material.

Within every domain of performance there are consequently varying opportunities for practice. The gradations are but little known as yet; the establishment of them will be of great practical importance, especially for psychotechnics and pedagogy. Only when a function is open to considerable exercise may one hope for improvement by practicing; it is here alone that there are adequate returns from the enormous expenditure of energy and time on the part of teacher and pupil (master and apprentice, etc.) which is required by practice.

As a practical consideration it is always necessary to take into account the amount of preparatory exercise that has taken place before commencing the actual practice. The typical form of the practice curve shows that a function is proportionately less open to practice the more it has been previously exercised.

Two fourteen-year-old boys are tested for manual dexterity; one has attended a school giving manual training, the other a school without it. If they both show *equal* proficiency in the test, it may be expected that the second boy will later forge ahead of the other, since he has more potential manual dexterity.

b. Individual differences depend not only upon the degree of proficiency in a function, but also upon definite *personal characteristics in practicing*. These determine *capacity for practice*.

To begin with, using a purely quantitative approach, there are people with greater and lesser capacity for perfecting themselves through practice. Great capacity for practice is a characteristic of those who are generally economical with their energy and abilities but who can make good their aspirations when required to do so. Reserves are accumulated which provide for the endurance and strength of concentration demanded by productive practice. An individual of this sort, by dint of untiring training, attains an ability that surprises himself as well as others.

An essential personality difference arises from the further fact that capacity for practice may pertain chiefly to improved performance or to diminished cost. In the former case performance becomes *perfect* through practice, and in the latter, *automatic*. People of the first kind persistently retain the object of the practice in the focus of attention, being untiringly devoted to its optimal performance; people of the second kind, while they may be satisfied with a lesser degree of proficiency, contrive to automatize the performance.

Where the difference is exceedingly pronounced, it is of great importance for occupational pursuits. The first type is in demand

for all occupations that involve a fairly wide range of activities and place rather heavy demands upon intellectual adaptation and organization, etc.; even with the largest amount of practice the action must not become mechanical. The automatic type of worker, on the other hand, is well adapted to uniform activities (work on the assembly line, sorting, etc.), since such activities provide far too little material for a lasting exertion of attention. The highest type of skill is that condition which makes the uniform features of the work automatic in order that the variable features may be met more adequately by paying attention to them.

H. Wunderlich studied the various *types* of capacity for practice in industrial work that are revealed in uniform tasks. His "monotony apparatus" requires the treatment of assembly parts at the rate of their delivery. Many people consistently maintain conscious cognizance of the work though no interest in it. The fixed tempo comes into conflict with their own natural tempo, and the effect is extremely unpleasant. Even with the maximum of practice there is no mechanization, but rather a growing mental resistance. In marked contrast, a second type is ready at once to adjust to the prescribed rate, and to adopt the rhythmical motor set. With this type the act becomes completely mechanized in short order, while their consciousness is able to occupy itself with altogether different objects. In an intermediate type a kind of splitting of consciousness occurs; performance is quickly improved by practicing but never thrust entirely into the unconscious; at the same time there is opportunity for concomitant mental activity, though not of a concentrated sort.

II. FATIGUE

I. FATIGUE AND TIREDNESS¹

The dynamic process of decline in performance is called *fatigue*. Three things are to be distinguished in the process of becoming fatigued. They are the change in the performance itself (which may sometimes be represented by a *curve of fatigue*), the *cause* responsible for fatigue, and the precipitate of the process in *consciousness*, or the feeling of tiredness.

a. To begin with the last item, tiredness and fatigue are not identical. Tiredness is a purely psychological concept in the realm of experience, fatigue a psychophysically neutral concept in the realm of performance. Within certain limits the two phenomena may even occur independently of each other. Thus there are situations that are so exacting that the individual exhausts his energy down to the last dregs, thereby making continuation of the performance out of the question (that is, he becomes extremely "fatigued"),

¹ *Ermüdung* and *Müdigkeit*.

without there being any experience of tiredness; as in fleeing from one's pursuers, in studying for an impending examination that is greatly dreaded, etc. Conversely, a vivid feeling of tiredness may occur (e.g., in neurasthenia) without entailing a noticeable drop in the capacity for objective performance.

Such unrelated cases are exceptional, to be sure. Normally tiredness is the mental indication of the onset of fatigue. Decrease in performance shows up in terms of experience, not only in cognizance of reduced activity, but also in alteration of the level of *feeling*. Essential to the feeling of tiredness is the consciousness of slackness and a lack of readiness for activity. Yet this feeling never occupies an unequivocal position in the dimension of pleasantness and unpleasantness. Tiredness is by no means always unpleasant in tone; in its milder forms it may give rise to an out-and-out pleasant experience.

The feeling of tiredness, moreover, may be localized or general; after tramping there is tiredness in the legs while there is still a general feeling of freshness. After continued tramping the feeling of tiredness gradually spreads over the entire body; one even becomes "too tired to think." The tiredness with which healthy children tumble into bed at night is of a generalized nature.

The *personal significance* of tiredness consists in its service as a warning and regulatory signal. Through it the individual becomes aware that a reduction of performance has set in and threatens to increase with continuance of the activity. Thus the feeling is *prospective* in meaning; it calls a halt to exertion, interrupting action for rest. A *local* tiredness reveals that some particular organ (the legs in our example) no longer has available for performance the previous quantity of energy; the *total* feeling signalizes commencing exhaustion of the total supply of personal energy. The feeling of tiredness can have a pleasant tone, therefore, only if the previous inroads upon this energy were not too great, and when the hortatory nature of the feeling, "end the performance; take a rest," is effective.

In the instances cited above of the inconsistency of fatigue and tiredness the warning function of the feeling was *disturbed*. The individual who runs on and on in fear for his life until he drops down completely exhausted in some place of refuge, could not well take account of the conscious warning of his diminishing forces because self-preservation is more important than economy of energy and health. The candidate for the examination who burns the midnight oil even makes use of special stimulants in order to *deaden* the feeling of tiredness. Conversely, the neurasthenic feels tired from the time he gets up in spite of having slept well and with no chance of having fatigued himself through activity. With him the

feeling is a *false signal*; it deceptively indicates incapacity for performance while in reality activity is unpleasant to him and he is averse to it.

b. *Causes of fatigue.* Lowering of the value of performance is brought about by two groups of causes; fatigue stimuli and performance itself. *Fatigue stimuli* leading to "non-functional fatigue" include:

(1) Influences affecting the *vital organization*, which pertain to the physico-chemical make-up of the environment. Atmospheric and climatic conditions that have a fatiguing effect are unaccustomed heat and cold, very humid air, remaining in badly ventilated rooms; and specific substances that lower the energy level of the organism (alcohol, morphine).

(2) *Monotonous stimuli.* A protracted series of monotonous stimuli obstructing the vigor of attention lowers the capacity for performance. The individual is either lulled by such a situation (the clatter of a mill, the noise of a brook, lullaby singing) or over-exerted (flickering moving pictures); in either case he becomes fatigued. This effect is enhanced when the monotony not only affects the senses but also leads to passive movements of the body. The fatiguing effect of railroad travel may be assigned to a combination of the clattering noise and the persistent vibrating of the body. Mothers of all times and races have known that the surest means of tiring the infant and putting it to sleep consists in the combination of monotonous singing and rocking of the child back and forth.

(3) *General burdening of the psychophysical powers.* The individual becomes fatigued not only by work but also by enjoyment, unhygienic modes of living, too little opportunity for sleep, and even by too great a surfeit of the very means that make for recreation, such as play, fresh air, etc.

Distinct from these fatigue stimuli are those causes which reside in the performance itself. If continued for a considerable time, every performance *draws upon its own source of energy*. Each part of the work thus represents both *effect* of fatigue (due to preceding parts) and *cause* of fatigue (affecting further activity.)

This true *functional fatigue* is the principal topic of all investigations of fatigue in psychology, pedagogy, hygiene, psychotechnics, and industry. In this realm it is possible to apply exact experimentation to a high degree since the factors of time, energy and outcome in performance are measurable and can be varied deliberately under controllable conditions. Indeed the results of such investigations have been utilized for practical reorganization in instruction, factory work, etc. But the study of functional fatigue that is most favored should not disregard the non-functional fatigue stimuli that we

outlined above; their importance is not lessened because their effects cannot be so readily isolated and expressed in quantitative terms.

Functional fatigue is consequently the *lowering of performance through performing*, and the counterpart of "direct practice" which we discussed in the preceding section. In long continued work both factors are effective, and are scarcely separable from each other. Practice improves performance, making it easier and mechanical, and reduces the necessary *expenditure* of energy. But fatigue, through the use of energy, reduces the *supply* of energy remaining available, making performance more difficult and making it worse.

By constructing a "work curve" out of the amounts of homogeneous performance (e.g., of an industrial worker) in different periods of a day one will find portions for which the level of performance remains constant. This may be due either to a real constancy of energy or to a compensating of the practice effect by the deteriorating influence of fatigue. There are other portions in which the one effect is distinctly superior to the other. Sometimes different components of the performance are affected to different degrees by practice and fatigue; e.g., increased practice raises the general level of *ease and speed* of performance by mechanizing it, while at the same time increasing fatigue may lower the *goodness* of performance.

Experiments in school with simple written arithmetical tasks that lasted one hour resulted in increasing the speed of calculating, but also the number of errors to an even higher degree, so that the fatigue effect outdistanced the practice effect.

2. SPECIFIC AND TRANSFERRED FATIGUE

In exactly the same way as practice spreads to other areas of the person (see p. 493), so the effect of fatigue does not remain restricted to the original domain of performance but is radiated to other functional areas and may finally possess the whole person—as total fatigue.¹

The law discovered in connection with transfer, that the radiation is graduated to the closeness of relationship of the functional areas, likewise holds for transfer of fatigue.² If hard work has been done for some time with the right arm the left arm likewise has less capacity for performance than otherwise, although the power of the legs may perhaps not be greatly lessened. Similarly in the mental sphere if an exacting class period in French is followed at once by one in German,

¹ The phenomena of radiation may be connected *physiologically* with the doctrine of "fatigue poisons." Any performance, whether carried on by the brain or the limbs, evokes biochemical changes in the organ involved, which affect adversely the further functioning of the organ. But since the fatigue poisons thus produced may be sent through the entire body, the capacity for performance of other organs is also diminished.

² *Miterniedigung.*

the transferred fatigue will be far more noticeable than if a class in biology follows that in language.

Indeed, a paradoxical effect may occur if the two domains of performance are widely different. It is then possible for fatigue in one sphere to favor performance in another. This is the principle of *alternation*; the use of energy at one place in personal performance has as its effect the summoning and storing of energy at another place, so that performance is accomplished in the latter case with especial ease. The second activity has a plainly restorative effect. These contradictory processes of radiation of fatigue on the one hand and restoration through alternation on the other considerably increase the difficulty of analyzing the conditions of personal dynamics.

When, for example, a pupil has spent the morning on chiefly theoretical studies which have produced considerable intellectual fatigue, this may radiate through the body, revealing a lessening of energy in his speed of walking home, his bodily posture, etc. But this fatigue may also result in his having to break out after sitting still so long; thus the appropriate response to the protracted expenditure of intellectual energy is the need for seeking strong discharge of bodily energy rather than bodily relaxation. Here much depends upon individual predispositions; yet some general statement may be made. The tendency for fatigue to radiate is great when the primary fatigue is very intense, while medium fatigue can find its compensation in activity of a different kind. Moreover, even with a considerable shifting of the *domains* of activity, it is less a matter of alternation than of radiation, provided the *forms* of effort remain similar.

Example: In some schools between class periods there used to be ten minutes of gymnastic exercises; but it became clear that no relief from intellectual strain but added strain, thereby resulted. The relief required by the pupil is above all relaxation of *attention* from the compulsion to meet external demands. But a compulsion of attention is present in the gymnastic exercises. Only a true "pause" which allows the pupil to make *free disposal* of his energy can relieve the previous strain upon attention.

The close relationship between fatigue and attentional effort¹ also obtains during instruction, and notably in the much discussed phenomenon of *inattention*.² The latter is a personal *defence*; it serves to prevent too rapid fatiguing.

The failure of a pupil to be maximally attentive throughout the entire four-hour morning session, while it may be disquieting to the teacher, is a necessity for the pupil. In holding, on the average, to a medium degree of attention, from which he may ascend on *demand* to the peak of attention,

¹ Lipmann especially has emphasized this.

² See p. 477.

he unconsciously maintains an economy of energy without which the school instruction would give rise to the most injurious effects of fatigue. Private instruction, where the pupil must continue at the maximum of attention, is still more fatiguing than class instruction. Private instruction lasting for four hours each day would be well-nigh impossible for a child.

The pupil who because of lack of interest must constantly *force* the necessary degree of attention in school becomes far more fatigued than the interested pupil who devotes spontaneous attention to his subjects.

The distinction frequently made between *physical and mental fatigue* is manifestly a dubious one. These separate categories may be employed only in so far as the *causes* of fatigue alone are considered. Fatigue can be produced by purely bodily activity (e.g., ironworking), by purely intellectual activity (calculating), and by psychophysical activity (holding a lecture in a large hall that demands much of the voice). But when we consider the *effects* of fatigue, the boundaries vanish at once, and the psychophysical totality of the person becomes more or less the decisive factor. This proves true for the transfer discussed above, the need for alternation, the demands upon attention.

3. MEASUREMENT OF FATIGUE

Only specific performance and its diminution in the process of fatigue can ever be measured, not the total change that is set up in the person by fatigue. Distinction must be made between those measurements in which the functional domain of the cause of fatigue and the effect of fatigue are identical, and those measurements which infer the fatigue from an indication of some other kind.

To the first class of measuring procedures belong the "methods of continuous work" already mentioned; by these, fatigue is produced through definite continued performances (calculating, writing from dictation, associating, etc.), and measured by the lowered figures for quantity and quality of the same performances. An extensive practical field of application for this method is furnished by monotonous occupations. The uniformity of the work permits precise quantification and comparison of the output for the different parts of the working day, so that the falling off in capacity may be determined at once.

By this means, for instance, it might be demonstrated that for certain industries a longer shift, considering the increased fatigue effect, would accomplish no greater results from performance than would a shift that was shortened by one hour.

But when the performance producing fatigue is not sufficiently uniform for such measurements, the *sample testing method* must be

employed. The working day of an extremely busy doctor or the session of a school pupil is so crammed with different kinds of activities that comparison of the degree of fatigue as based on the activities themselves is impossible. Short tests using an identical method are resorted to; these are administered at least twice, at the start and at the close of the working period, in order to determine the diminution of energy that has meanwhile taken place. A more refined measure adds tests made between times in order to obtain a fatigue curve.

In this method the day's work need not be modified as to its natural diversity, since the sample test does not depend upon the kind of performance that occasions the fatigue. Tapping rate (see p. 467) may be used as a sample test; at the close of each hour three-part tapping is done for half a minute, revealing the slowing up of the mental tempo, regardless of whether fatigue is produced by bodily activity or by mental work.

This method, of course, can be made use of only by virtue of transfer of fatigue; indeed, it demonstrates the effect of such radiation to a degree that is scarcely expected. Testing of delicacy of touch by the aesthesiometer is especially instructive in this regard. This device consists of two points (resembling dividers) that can be applied to the skin at various distances apart; what is determined is the "touch threshold," i.e., the distance between the points at which they are no longer experienced as two but as *one* diffuse stimulation. If the difference threshold on the back of the hand of a pupil is measured at the start and at the close of the school session, it turns out that at noon the distance between the points often has to be doubled. Thus by radiation the drop in attentional energy brought about by various school tasks is brought to light through the utterly unlike task of sensory discrimination.

Among other things, bodily fatigue is tested by the "ergograph"; one finger lifts a weight with rhythmical movements until its strength fails; the number of times it is lifted and the height to which it is lifted are recorded graphically. Here again noteworthy radiation effects are in evidence; thus after an oral university examination that required purely intellectual activity, the lifting power of the finger was far less than before the examination began, not only for the student, but also for the professor.

For sample tests in the domain of *intellectual* performance, calculating, intelligence tests, and the like, are employed. When Ebbinghaus tested the fatigue effect of a school session by such methods, the drop in performance was greater for difficult intelligence tests than for memory and calculation; this indicates again that it is primarily *attention* that drains the energy when school work is carried on for several hours.

The convenience of sample test methods is offset, however, by a serious defect; the personal *significance* of the amount of fatigue they reveal is indeterminate. When keenness of touch or the lifting power of the finger is markedly reduced after five hours of school work this is certainly evidence of authentic fatigue; but what is the significance of this fatigue for the natural functional capacity of the child in school subjects? And what is its significance in terms of the mental and physical hygiene of the child?

When measures of fatigue of this sort were first made a generation ago the tendency was to regard the results as invariable signs of *overloading* the pupil (as with Kraepelin). This was a false conclusion, or at least an unwarranted generalization. It proceeded from inadequate consideration of other dynamic categories, to which we must now turn.

4. RECOVERY, OVERTIRING, SATIATION

First we must state the proposition that fatigue is a process in the *normal* activity of the person, and not an abnormal manifestation that must be combatted. Indeed, it *cannot* be avoided by any means, since as long as the individual continues to perform he diminishes, through performance, his further capacity for performance. Fatigue is normal if it keeps within the limits of the general human cycle, that is, if it can be reversed by an opposite process. This process is called *recovery*. In recovery spent powers are restored, lessened capacity for performance is increased, and finally the need for new activity is also aroused. Consequently the possibilities of recovery are no less diverse than those of fatigue. After compulsory fatiguing activity, spontaneous, deliberately chosen occupations may have as much restorative effect as remaining out of doors for a while, strengthening the powers through nourishment, and bodily rest and sleep.

A healthy individual may fatigue himself without alarm, and he ought to do so, as long as he is assured that he can continually revert to his former level of performance and freshness through normal means of recovery. Hygienic considerations are justified, however, when regeneration does not occur at all or only with difficulty and at an abnormally retarded rate. The foe is not fatigue but becoming overtired.

If an overtired condition is brought on by external demands (pedagogical, vocational), it is referred to as "overburdening." In this respect there are very marked *individual* differences. The same school tasks and homework that produce fatigue in pupil A merely within the normal limits of recovery, may amount to an excessive demand upon pupil B and be prejudicial from the point of view of hygiene. It is similar with adults in regard to the demands of voca-

tional activity. Thus the problem of overtiring and overburdening is not so much a problem of general as of differential psychology, and obviously, also one of psychopathology.

The maximum of overtiring, which makes performance out of the question for a considerable period, is called *exhaustion*. This too may be physical ("I can't lift a finger"), or mental ("he is unable to grasp an idea"), or it may affect the total person. It is remarkable that incapacity for meaningful and controlled activity need not be identical with the discontinuance of all activity. Besides limp exhaustion, which leads to physical and mental passivity, there is also overstimulated exhaustion; one is unable to sit still, but paces restlessly about, jerks ones limbs, and talks incessantly; mentally, likewise, one's thoughts "revolve like wheels in the head," and emotions get beyond control. Unrestraint is the essential feature of overstimulation. The higher processes which control and direct the course of personal activity to some purpose, miss fire so badly that impulsive activities devoid of control are discharged in a chaotic manner.

Finally, the personal state of *satiation* must be distinguished from fatigue. Though these are very similar in many of their outward forms of manifestation, they are nevertheless essentially different in nature. If fatigue is diminishing of *instrumental* dispositions for performance, satiation is the slackening of *directional* dispositions. This is implied in the original meaning of the term in regard to taking nourishment. Satiation does not occur through the fatiguing of the muscles necessary for eating, but because one has had "enough," because the need for further nourishment ceases, or is transformed into its opposite, revulsion for further eating.

The same thing holds for the mind. This is especially evident in the case of monotonous, continuous work. Although one is still in a position to devote the necessary attention and energy to carrying on the work, with some difficulty, to be sure, one "cannot do another stroke." The organs directly involved could continue to act, but in his deeper strata the person opposes continuance of the work; and if still compelled to proceed, the result may be unreasoning outbreak and disruption of the performance. Thus "inability to continue" is of quite different significance here than for fatigue and exhaustion; it is cessation of the *tendency* rather than the *potency* for performance. The external manifestations too exhibit a difference; satiation may occur with far more suddenness than fatigue; it often has different after-effects and prevents resumption of the performance even after pauses in which the effects of pure fatigue would be definitely offset.¹

¹ The phenomenon of satiation has lately been investigated by Kurt Lewin, A. L. Karsten, and others.

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PART SIX
FEELING

CHAPTER XXVIII

ANTECEDENT THEORIES OF FEELING¹

The theory of the feelings constitutes as it were the acid test of the personalistic formulation of psychology. The inadequacy of the attempt to carry on in psychology with impersonal categories is nowhere so obvious as in the domain of feeling, and the need for a complete change of approach is nowhere more pressing than here.

This requirement makes it imperative to commence with a survey of the theories of feeling in recent times. Proceeding with this task we shall emphasize those points which are important (either negatively or positively) for establishing the personalistic theory of feeling.

In the 17th century emotions were subjected to thorough psychological discussion for the first time (primarily by Descartes and Spinoza). During the 18th century Rousseau, Hume, and others attempted to oppose the intellectualistic conceptions of human life and action with a view of the deeper significance of feeling. At the same time "feeling" was posited by the German Enlightenment as one of the fundamental "faculties" of the mind, and ranged beside the other two faculties of thought and desire.

Since those days psychology has been concerned unceasingly with the investigation of the feelings. Until very recently, however, the results were unsatisfactory for the reason (which is only now becoming clear) that those psychological methods which appeared to be trustworthy with other mental data, perceptions, ideas, acts, were also brought to bear in the investigation of feeling. The chief method was that of analysis into ultimate elements, together with classification and arrangement and investigation of accompanying physiological phenomena; the constant endeavor was, in other words, to conceive and explain the feelings in an *impersonal* way. To be sure, there were always counter currents, but these proceeded chiefly from philosophy, ethics, or an anti-scientific, sentimental romanticism that exercised little influence over the course of authentic psychology.

The classical psychology of the 19th century especially was predominantly in the grip of this sort of impersonal attitude toward the problems of emotional activity; the work begun by Herbart and Wundt, Ribot and James, was continued down to the present by

¹ For the history of the problem see the new book of Gardiner, Metcalf, and Beebe-Center.

numerous investigators, being refined and rendered more profound until a reaction eventually occurred.

I. OLDER THEORIES AND RESULTS

I. ANALYSIS AND CLASSIFICATION OF THE FEELINGS

The feeling processes fall naturally into two classes. On the one side are the "emotions," i.e., mental states of the sort that temporarily encompass all experience and make all other mental activity *subordinate* to them; on the other are mental nuances inherent in processes and contents of a different kind, taking on in consequence a more specialized and more limited character. These are the "feelings."

a. Elementary feelings. The first task of psychology was taken to be that of *analysis*. The emotions were analyzed into their components; it was recognized that besides true feelings, they involved images and thoughts, organic sensations, and motor attitudes. Analysis of the feelings themselves was pushed forward until it was thought that their ultimate components, the "elementary" feelings, had been attained.

The nature and arrangement of these *elements* ultimately provided the chief problem of the older theories of feeling; all other feeling phenomena had to be demonstrated as combinations ("complexes") of more elementary feelings among themselves and with other elements. Doubt of course arose as to whether there are any simple feelings in the sense of *independent* mental elements, or whether it was merely a question of *dependent* constructs of other elements (of so-called feeling—"tones"). But whichever view was advanced, there was general agreement that the elementary phenomena of feeling were closely related to sensations; to organic sensations on the one hand (examples: the feelings of hunger and tiredness), and to the effects of external impressions on the other (examples: the pleasantness of the taste of sugar, the painfulness of a shrill dissonance).

This *sensationalistic* view was maintained in regard to the question of the *fundamental qualities* of the elementary feelings. As everywhere in scientific analysis, the attempt was made to *reduce* the qualities first appearing to the smallest possible number of classes of uniform elements, and to arrange these classes in a *coordinated system*. Models for this purpose were provided by sensation psychology, which possessed, among other systems, a unidimensional system of temperature sensations and the tridimensional system of color sensations.¹ The attempt was made to erect corresponding systems in the sphere of feeling.

¹ Cf. pp. 133 and 143.

b. *The pleasantness-unpleasantness scheme.* To most 19th century psychologists a *linear* system appeared to be necessary and adequate for the arrangement of these elementary phenomena of feeling; the axis extends in opposite directions from an indifference point, and represents the different degrees of *pleasantness* or *unpleasantness*¹ from the one extreme to the other. This conception doubtless gives expression (though inadequately) to one of the most essential features of feeling; that of *polarity*.

The language of all peoples and times has maintained a basic opposition of feelings. People everywhere speak of joy and sorrow, of love and hate, of hope and despair, of being "in transports of heavenly bliss," "grieved unto death," etc.

When a sober scientific attempt was seriously made to arrange all feelings in a pleasant-unpleasant series, three consequences resulted which were stated by some investigators and ignored by others.

(1) If there is but the one dimension of feeling, every feeling that exists can be characterized by its position on this scale. Feeling phenomena which cannot be located at once must be analyzed until it is determined in what way the elementary feelings of pleasantness and unpleasantness are complicated by non-emotional conscious contents (sensations, ideas, etc.).

(2) Within the feeling of pleasure on the one hand and of unpleasure on the other there are only *differences of degree*, no qualitative differences. If for example, the enjoyment of a good cigar is compared with that of a Beethoven symphony or with satisfaction over a good deed, the feeling of pleasure may be more intense in the one case and weaker in another—but further differences cannot be acknowledged as originally existing because they would fall outside the linear diagram.

(3) Even when the pleasant and unpleasant trends of feeling are compared *with each other*, the theory cannot distinguish qualitative differences, but only *differences of sign*. The intensities of the feelings ranged along the halves of the axis may be compared and counter-balanced by their distance from zero. They describe equivalent extents; if one or the other predominates, there remains in the combination a certain excess of pleasure or unpleasure.

The extent to which this fondness for mathematics may go is revealed in certain theories of feeling which belong less to psychology than to philosophy and ethics, and which seriously strove to set up a "balance sheet" for pleasantness and unpleasantness. The proponents of pessimism particularly proceeded with notions of this sort; Schopenhauer and Eduard von Hartmann thought they had given an exact demonstration that the sum of sorrow in the world infinitely exceeds that of pleasure.

¹ *Lust, Unlust.*

They were even inclined to leave the credit side of this feeling account wholly blank; what is called pleasure was for them merely temporary lapses of unpleasure.

Professional psychologists, to be sure, have not participated in such extravagant mathematical formulations of the feelings. Nevertheless the implicit consequences resulting from the unidimensional system of feelings were extensively applied. They simplified the qualitative variety of feelings into a matter of greater or lesser degree of pleasantness and unpleasantness, and this is a distortion of the facts.

The very designation pleasantness and "*un-pleasantness*" betrays the nature of the embarrassment. Any usage of language calculated to make pain, sorrow, anxiety, hate, disgust, the mere *negations* of pleasure has never taken root beyond the confines of scientific theory. In natural usage (which deserves notice as the direct deposit of popular wisdom in the domain of feeling), while there are also negative designations like "*unpleasing*," "*displeased*," "*joyless*," "*unsatisfactory*," these describe weak degrees at best. Pronounced feelings of pain have their own *positive* designations, for they have their own qualities in experience.

Even *within* either of the two categories, the gradations are not adequate. To stick to the example used above, in determining that the enjoyment of the cigar, while more intense than the enjoyment of the symphony, does not last so long, the difference between the two enjoyments is doubtless characterized by quantitative statements only in respect to the non-essential features. And it would simply be an evasion to say that the difference is determined solely by the sensations, images, etc. involved in it. The truth is that the enjoyment itself, *in its immediate quality of inner experience*, is always qualitatively different.

c. *Wundt's system.* Insight into the inadequacy of an unidimensional system of arrangement impelled Wundt to construct a *tridimensional system* of feelings. Besides the opposition of pleasantness and unpleasantness he posited two other pairs of opposites that were supposed to be equally elementary and irreducible: "*excitement—calm*," "*strain—relaxation*." If the states of exultation and ease are compared, both are on the pleasant side, but at opposite poles of the excitement-calm dimension. The third opposition, of strain and relaxation, appears with especial clarity in the process of expectation; *both* feelings may be pleasantly toned or unpleasantly toned, or neutral as to pleasantness and unpleasantness.

The opposite pole from "*excitement*" was sometimes called "*calm*" by Wundt and sometimes "*depression*," although these are two very different tones of feeling. Moreover, an unpleasant tone attaches to the feeling of

"depression," so that it cannot be located on a dimension independently of pleasantness and unpleasantness. Then too, both of Wundt's new dimensions are connected with *each other*; excitement is closely related to strain, relaxation to calm.

Very recently *excitement* has been rediscovered by some psychologists as an independent elementary phenomenon of feeling. Claparède isolates an *émotion pure*, a kind of state of being "stirred," which signifies a brief shocking of the physical and mental situation that is not attended by pleasure or displeasure. Stratton opposes "excitement" as a completely undifferentiated emotion to the differentiated emotions like fear, affection, and anger. T. Chiha introduced the Japanese name "*Muki-feeling*" for an elementary emotional state that is neither pleasantness nor unpleasantness, nor yet indifference.

As opposed to unidimensional pleasure-unpleasantness, Wundt's system certainly has the advantage of demanding less uniformity. But the fundamental objections remain. Whether one, or three, or perhaps still more pairs of opposites are posited, in every case they will determine a narrowly limited number of elementary feelings which can give rise to the entire range of emotional activity only through combinations of various kinds.

Nevertheless such classifications are of some value, and we shall make use of them on occasion; only they must not be regarded as classes of elements *from* which feeling-experiences arise, but as *attributes* that may be discerned *in feelings*. While they are helpful in describing feelings, they do not do it *exhaustively*, since the total quality of a feeling is something different from a complex of degrees of pleasantness, strain, excitement, (or the opposites). The system permits the comparison of feelings from definite points of view without emphasizing the incommensurable peculiarity of some one feeling.

Leaving aside the elementaristic approach, the question of the *number* of attributive dimensions that are to be considered becomes secondary. The more the psychology of feeling is refined, the more points of description and relationship will be discovered. Thus in recent years new pairs of opposites have been demonstrated: depth and surface, genuine and non-genuine, serious and playful. The old differentiation of "higher" and "lower" feelings also proves to be serviceable in science.

Finally, our "attributive conception" permits a step in investigation that is denied to the theory of elements; the question of the *significance* of the attribute may be raised and answered by reference to the personal attachment of the feeling. (See the following chapter.)

d. Feeling sensations (Stumpf). The relationship of certain feelings to the sphere of sensation has given rise to a unique theory. According to Carl Stumpf, all those phenomena which are usually

designated as "sensory feelings" or "organic feelings," belong to a wholly different class of mental elements from true emotions; they should be grouped not under the feelings, but under *sensations*. Stumpf calls them *feeling sensations*.¹

This theory is supported by physiological investigations of von Frey which demonstrated the special organs for *pain* experiences on the skin. "Skin-pain" is thus a conscious phenomenon produced by specific stimulation of a specific organ, and is hence a "sensation," not a "feeling." Stumpf extends the concept of feeling sensation to other sensory experiences proceeding from the skin, like tickle, itch, and lust, and finally, even to the feeling tones of simple sensations in the other departments; thus the pleasantness of the taste of sugar is supposed to be a peculiar, centrally aroused "concomitant sensation" beside the true taste sensation "sweet," etc.

In present day psychology which no longer recognizes "sensations" as real elements of mental activity (see pp. 110 ff.), the contest which at one time waxed lively over the "real existence" of feeling sensations has all but lost its significance. Even though "pain" may be isolated as a unique sensory quality and so experienced, the *disagreeable* nature of pain, that is, its true feeling aspect, is no longer isolated, but is in some way embedded in the total person and thereby removed in its nature from any hypothetical *element* of sensation.

2. SOMATIC BASIS OF FEELING

a. *Psychophysical correlates*. Searching investigations in psychophysiology and medicine have in the past considerably increased insight into the connections between feeling processes and somatic states.

Plato localized passion ("θυμός") in the breast, in opposition to the faculty of thought with its seat in the head. The distinction between "heart" and "head" is to be found in the speech of well-nigh all peoples, and is attested to a considerable extent by modern science.

While the central nervous system and especially the brain could be brought specifically into relationship, locally and functionally, with the activities of perception, ideation, thought and will, this could not be accomplished for the feelings; on the contrary, they were shown to be closely connected with changes in circulation, breathing, digestion, and secretion.

Also in the investigation of these physiological equivalents of feelings the *elementaristic* attitude at first predominated. Graphically recorded curves of the pulse- or breathing-rate were analyzed as to tempo, symmetry or asymmetry, amplitude and form, and it was

¹ *Gefühls-Empfindungen*.

sought to determine how the particular elementary changes in emotional activity were expressed by changes in these physiological features. Tremors of the limbs and deflections of the galvanometer on conduction of a galvanic current through the body were also pressed into the service of these studies of feeling.

The devices pertinent to such work may be found described in any textbook on physiology or experimental psychology. The cardiograph records the rhythm of the heart-beat; the sphygmograph, the pulse in the wrist; the plethysmograph, fluctuations in the volume of blood in the arm; the pneumograph, the breathing curve; the psychogalvanometer, electrical changes in the body. Tremors of the limbs are tested by the "psychograph" (Sommer) and in grosser form by the tremometer.

While a device of this kind is connected with the body of the subject he is given some sustained psychological task which provides opportunities for the occasional presentation of stimuli to feeling (by causing horror, surprise, pain, by presenting pictures of pleasing and displeasing content, by building up suspense and removing it, by making false accusations). The temporal coincidence of certain feelings with certain changes in the recorded curves can then be determined.

One general outcome is the fact that the body responds in an extraordinarily delicate manner to changes in emotional set; even feelings of insignificant intensity and brief duration do not fail to show somatic accompaniments. *Interruption* of an originally relatively neutral mental situation by emotional shock (horror, surprise) shows up with especial distinctness in variations in the curves.

If for example the experimental subject whose hand is in the "psychograph" is directed to notice some particular card in a pack which is laid in front of him card by card, the experimenter can tell exactly from the deflection of his tremor curve which card had been chosen, even when the subject is endeavoring to avoid all expressive movement.

The feasibility of the method, however, was reduced at once when an attempt was made to correlate mental and physical functional elements *in particular*. This was formerly undertaken with especial reference to Wundt's theory of feeling, it being hoped to discover clear-cut somatic correlates for each of the six proposed elementary trends. The results of the manifold and tedious investigations were inconclusive and contradictory. No conclusive physiological correlates at all were found for the pleasure-unpleasure antithesis. The sole certain finding, that the opposed feelings of excitement and calm are also expressed by varying degrees of activity of breathing and heartbeat, scarcely required such elaborate experimental techniques.

The problem has lately been taken up by American behaviorism, imbued with the conception that emotion amounts merely to a special kind of internal physiological activity. Here too it was impossible to demonstrate differences in internal organic functions that distinguish e.g., the emotion of fear from the emotion of anger.

b. The James-Lange theory. In yet another way physiological processes have proved of importance for the general theory of feeling.

The circulatory, respiratory, vegetative and motor processes have their own *conscious concomitants*; these experiences, which are produced by internal stimuli, are usually regarded as "sensations." Thus there are "organic sensations" of an overfull or empty stomach, of a quickened heartbeat, of blood withdrawn from the head, of special ease or difficulty in breathing. There are kinaesthetic sensations of position, the movement, and tremor of the limbs. In general these descriptions of our own bodily states appear as *conscious* experience only when there is some aberration of normal function, and therewith an intense pleasant or unpleasant toning. This circumstance impelled many who theorized about feeling to look here for the true source of feeling, and not alone of true "somatic" feelings, like hunger pangs, tiredness, heartburn, but of *all* feelings.

Now it is certainly true that some physiological process, which can enter experience as organic and kinaesthetic sensation, is connected with every emotional state, be it satisfaction with one's success, grief over news of a death, the strain of taking an examination, fear of darkness, religious devotion. From this determination it was but a step to the contention that feelings *are* these somatic experiences.

This is the fundamental conception of the "James-Lange theory of emotion."¹ It reverses the customary "intellectualistic" explanation of the causation of feeling in the following manner. A lost traveler blunders into a dark wood at twilight and becomes "anxious." The causal sequence is not the sight of the dark wood, an idea of the dangers that perhaps lurk within it, a *feeling* of anxiety, pounding of the heart and trembling; but the sight of the wood, *direct somatic reaction to the shock stimulus* in the form of quickened heartbeat, shaking of the knees, etc., unpleasant organic sensations of this abnormal somatic response. It is organic sensations of this sort and they alone which *constitute* the "feeling of anxiety," and only because of the feeling are the intellectual contents connected with the wood experienced as productive of anxiety, as "ideas of danger," etc.; except for disturbance of organic sensation these would simply become motives to appropriate acts of will.

The concise statement to which William James reduced this theory

¹ Proposed in the 1880's by the American William James and the Dane C. Lange.

has become famous: "We do not cry because we are sorry, but we are sorry because we cry."

Precisely because of its extremeness, the James-Lange theory has been very serviceable in calling attention to the great importance of organic experience in the structure of feeling, and every psychological theory of feeling must continue to reckon with it. Moreover, it rightly holds, though the point requires more detailed discussion later, that emotional responses may be made to stimuli *before* there is any adequate knowledge of the urgency or danger betokened by the stimulus. Finally, it must be admitted for *certain* emotions that they have their essential basis in such organic experience; thus there is without doubt "anxiety" which depends merely upon constriction of the heart. The violent emotions especially (e.g., rage, horror) are inconceivable apart from intense changes in bodily functions and in the organic sensations connected with them.

But it is just the different share of organic experience in various emotional phenomena that calls the universality of the theory into question. Compare the anxiety described above, resulting from nervous disturbance of circulation, with the anxiety of a mother over her sick child; are the emotional experiences as such really identical, with the difference lying solely in the accompanying ideas? Altered organic sensation certainly plays a part in the total feeling of the mother, elicited by irregular pulse, overtiredness, inadequate nourishment, etc., but the core of the mother's experience of anxiety is provided by her relation to the child, which is not merely conceived as an idea but is immediately *felt*; it is a state of "feeling with" the child in its pain, of feeling in advance the threat to its life, of feeling herself at one with the life of the child.

The theory is quite inadequate for dealing with the higher feelings (which refer to the realm of value), like religious fervor, aesthetic enjoyment, twinges of conscience, and the like. Whatever actual functional changes of the bodily organs take place in such cases either remain wholly below the threshold or lead to insignificant modifications of experience which are out of all proportion to the powerful force and depth of these feelings. They must be sustained by other sources than organic sensations of circulation, digestion, muscular movement and breathing.

II. NEWER THEORIES AND APPROACHES¹

In recent years the conviction has gained ground that the true nature of emotional phenomena cannot be plumbed along the line of analytical study described above; that on the contrary, approaches and methods that are basically of a different kind must be employed.

¹ See also the critical survey by William McDougall in *Acta Psychologica*, 1937.

Common to all such tendencies is a stronger regard for the *subject of feeling as a living unity*; there is an admission that the feelings are "near to the person" in a quite different sense from ideas, etc. This movement follows paths which are in the main either biological or psychological, but which all converge in a more or less forthright way upon the personalistic approach that we shall present in the next chapter.

I. THE BIOLOGICAL THEORY OF FEELING

a. *Biological polarity.* Biology has a share in the trend of scientific thought away from the elementaristic conception and toward the totality conception. The organism is regarded as a unified purposive system; the structural principles are studied which dominate the structure and function of the body as a whole.

In correspondence with this shift is the view that the somatic basis of emotional activity is not, as previously believed, the elementary functions of circulation, breathing, etc., but the *total biological functions* of adaptation and expression.

The purposive approach is trained by this new psychobiology upon the polarized concepts of the *furthering of life* and the *diminishing of life*. All *functions* of the organism are dealt with from the point of view of whether they contribute positively to the preservation, security, and enhancement of life, or menace in a negative way the status or the level of the living organism. The external world, with its influences, is similarly divided up into those *stimuli* to which the organism is adapted (or to which it can readily adapt), and those to which adaptation is possible only with difficulty or not at all.

This fundamental biological polarity was early connected with the polarity of pleasant and unpleasant feeling;¹ modern psychology, with its biological foundation, revived the conception and made it the basis of theories and investigations of feeling. It is to be encountered in developmental psychology, in American behaviorism, in McDougall's hormic psychology, and elsewhere.

The contention is that pleasure is the mode in which the furthering of life is experienced (adaptation), unpleasure, the mode of experiencing disturbance and menaces to life (non-adaptation). *The bare experience* of beneficial or injurious life processes would not, however, have any significance for the organism. Thus the biological theory needs an important amplification: Feelings of pleasure and pain are not simply states which accompany concomitant biological processes, but are also the motive force of further action. In every feeling there lodges an *impulsive aspect* which determines behavior; its effect

¹ Spinoza related the emotions of joy and sorrow to the assumption by the individual of greater or lesser perfection.

is not dependent on the participation of a conscious notion of the meaning and goal of behavior.

Consequently the biological theory of feeling cannot be considered apart from its close connection with the theory of *impulses and instincts*. Its value lies in its emphasis upon this connection.¹

Feelings of pleasure urge the continuance of the state that gives rise to them; unpleasant feelings are converted into actions and behavior that are calculated to remove the unpleasant condition. "Pain says: Depart! But all pleasure looks for perpetuation!"² The tendency of pleasure to perpetuate itself amounts to the furtherance of a state profitable to life. The impulsive force of pain on the other hand, in becoming salient has the effect of restraining a process injurious to life. In other words, pleasure and pain are biological *signals*, the one being an encouraging prod which the organism gives itself: "keep on going!"—the other, a warning signal: "stop!" or "be on your guard!"

American behaviorism and related theories have said that the true *mental* phenomena of pleasure and unpleasure may be left out of account and that only the behavior of external adaptation to the stimulus need be taken into consideration. Thus for example, according to Woodworth the differentiating factor for different emotions is to be regarded merely as a question of whether the organism makes an *approaching* reaction toward or a *withdrawing* reaction away from the stimulus.

b. *Limits of the theory of biological polarity.* The merits and disadvantages of this theory are determined by its biologicistic limitations. It treats the individual solely as an *organism*, and under this concept is concerned only with the *generic* and *fixed adjustments* of response to environment. Air containing oxygen is beneficial for the organism to breathe; breathing stale air is injurious; accordingly it is pleasant to be in the fresh air and unpleasant to stay in a poorly ventilated room. If the hand accidentally comes into contact with a flame, the feeling of pain on being burned serves as a signal to remove the danger of the fire by withdrawing the hand or by extinguishing the fire. Foods that are acceptable to the body also taste good in general, and they taste good only so long as the organism requires them. If the individual is satiated, or adequately nourished with certain foods, the pleasant feeling and thereby the impulse to continue taking the food stops of its own accord.

These examples could be multiplied. But they all refer to the *biosphere*, that is, to those classes of feeling that are not specifically

¹ See Chap. XX.

² *Leid spricht: vergehl Doch alle Lust will Ewigkeit.* (Nietzsche, "Mitternachtslied," in *Thus Spake Zarathustra*.)

human but affect animals as well. With lower animals the correlation of pleasure with appropriateness and of pain with inappropriateness of response is in all probability fairly conclusive and general. But with man, nearly every positive instance may be countered with some *exception*.

There are poisons that taste good, for which the warning signal of unpleasantness (going contrary to the taste) is consequently wanting. In numerous instances of "manias" which are by no means merely pathological, injurious stimuli are charged with intensely pleasant feelings (alcohol, morphine), and these display to the highest degree the *impulsive* character of pleasure in prolonging the stimulation although the injurious effect is thereby increased. Moreover, the theory should also call for *graduated* correlation between pleasure and furtherance, between pain and injury. In that case a passionate smoker should receive far greater organic benefits from smoking than the moderate smoker, whose pleasure is less intense. Bodily illness should be the more painful the more it menaces life; as is well known, however, a superficial flesh wound may be well-nigh unendurable under certain circumstances, while serious derangement of internal organs scarcely affects the consciousness. (There is even a paradoxical enhancement of feeling in deadly diseases, e.g., tuberculosis.)

It is primarily the *higher* feelings which the theory is unable to explain. There is unpleasant toning to the feeling of remorse, the aesthetic experience of the tragic, and philosophical "problem pain." How are these feelings to be connected with organic injury? The ascetic seeks pain and avoids pleasure, though according to the theory the opposite impulsions should be in effect. The daredevil even thrills to dangers which threaten his biological existence.

These few examples reveal the principal objection to the biologicistic theory; its too simple categories of organic "adjustment" and "non-adjustment" are inadequate for dealing with the infinite variety of personal functions. First, the person includes an *hierarchy* of aims, so that any particular process may have at the same time opposite signs for different purposes. (For example: taking a cup of strong coffee enhances momentary mental alertness but impairs nocturnal sleep.) Secondly—and this is more important—the essential nature of the person includes more than the fulfilment of his organic purposes. The crass opposition of utility and injuriousness is no less inadequate than the attempt previously referred to, to reduce all feelings in the psychological realm to the poles of the pleasant-unpleasant dimension. It would be impossible to derive aesthetic or religious feelings exclusively from their positive or negative relation to utility. The biologicistic theory contains certain fruitful conceptions, but it must be considerably revised in order to suit the personalistic approach.

In the psychobiological position itself, however, may be seen the means of passing beyond the primitiveness of the bipolar theory.

McDougall devised a theory in which more proper treatment is accorded the qualitative range of the domain of feeling; he augments the duality of pleasantness and unpleasantness with a considerable number of emotions. The close connection of all states of feeling to the impulsive force of the organism is retained, but McDougall's whole theory is an "hormic" psychology (of striving). "Feelings" are sharply differentiated from "emotions." "Feelings" are the polarized tonings of consciousness which accompany in a general way a striving toward or against, or, gratification and frustration (pleasure and pain). Only these two qualities of feeling exist, either in a simple or complex form. Emotions, on the other hand, are connected with those *specifically directed* strivings which as "instincts" or "propensities"¹ innately determine the conduct of the individual; accordingly the list of primary emotions matches that of the instincts. The emotion of anger corresponds to the instinct of pugnacity, the emotion of wonder to the instinct of curiosity, fear to the instinct of flight, etc.

c. *Internal secretion.* From an entirely different angle, the physiological discovery of internal secretion has become of importance to the theory of feeling.

Internal secretion, while having its source in definite bodily organs, the *ductless glands*, radiates throughout the total organism and produces active substances (hormones) which flow into all the tissues and influence all parts of the body. Having no structure itself, but determining in all directions the organization of the body, this glandular flow is an organic symbol of the individual's bodily unity, just as the totality of feeling is a similar symbol of the mental unity of the person. The function of internal secretion may thus be correlated with emotional activity in a very different sense than the functions of other special systems. While breathing, heartbeat, etc. are concerned in the occurrence of *single* emotional processes, the effect of internal secretion pertains to the permanent and unified basis of all special manifestation of feeling, that is, to affective functioning as a whole. Constitutional peculiarities in internal secretion are expressed both in the make-up of the entire bodily structure and in the dynamic and directing qualities of affective activity (the "temperaments"). Changes in internal secretion leave their stamp upon affection as well as upon bodily processes (maturing of the sex glands, derangement of the thyroid, etc.).

An ancient psychophysiological hypothesis, the doctrine of the humoral mixtures, is resurrected in this modern discovery of the connections between internal secretion and temperament.²

¹ Cf. p. 397.

² For temperament see p. 569.

2. THE "SUBJECTIVITY" OF FEELING

There are some modern approaches to the theory of feeling that are psychological in a narrower sense, taking the person-world-relation as point of departure. The thesis then is: Feelings have a "subjective" character;—perceptions, ideas, acts of will, an "objective" character. That it may not be misunderstood, this very important distinction requires more exact definition.

If it is regarded purely in terms of the psychology of consciousness, it means that feelings come into experience as indicators of the states and processes of the self, while perceptions, images, ideas, and volitions do so as indicators of objects outside the subject.

But a subjective *consciousness* of this sort is doubtless not present in all phenomena of feeling; rather does it apply to a specific class of feelings, the "feelings of self." Most feelings are combined with a conscious intention to *objectification*, i.e., they are experienced as the feeling-aspects of *objects and values*. When in music a major triad is found to be "pleasing," not oneself but the chord is felt to be the source of this pleasure. And when an individual loves intensely, he may forget and lose himself entirely in his devotion to the *other one*. The feeling of "beauty," "sublimity," "holiness," points to the value of the objective events themselves.

Phenomenological reflection consequently reveals that *in terms of inner experience* feelings may have both subjectifying and objectifying trends in varying degrees of emphasis and combination. But if *subjectivity of inner experience* is not the distinguishing characteristic of all feeling, what other conception of subjectivity applies?

To begin with, there is the negative one of subjectivity as *non-objectivity*, as inadequate objectification. An outside observer is frequently able to recognize this inadequacy sooner than the feeling subject himself, since the latter remains in the grip of his illusory feeling of objectivity. The factual lack of objectivity may be revealed in different ways, social and individual.

a. *Inter-individual differences.* If many spectators view a painting, they will be in agreement as to the depicted content, and the perceptible colors and forms. But there will be conflicts of opinion over whether the painting is beautiful or ugly, attractive or repulsive. These conflicts usually have no outcome because each individual thinks he can demonstrate that the position he is led to feel through mistaken objectification is a feature of the object, and urges the others to acknowledge this objectivity, despite the fact that *de gustibus non est disputandum*.

b. *Changes in the course of a person's life.* Comparison of the feelings that an individual gets successively from one identical object,

discloses changes that are independent of the object; an enthusiasm grows and evaporates; an aversion becomes dulled, love turns to hate, etc. Here too the individual is reluctant to acknowledge that the shift of feeling is "merely subjective," and seeks the motive in some change in the object; thus the wearing off of a "crush" is explained by the very recent evidence of unworthiness of character of the loved one.

c. Change of the content. A feeling may rove from the original object that inspired it to other objects, and finally become entirely detached from the original goal. The merchant who is angered at his office by a displeasing business letter may on returning home grow angry over some ordinarily disregarded domestic trifle, and ultimately concentrate the feeling entirely upon it.

d. Changes of feeling that are independent of the objective conditions are well known as *changes of mood*. If such become a constitutional characteristic, this is called "moodiness."

In the life of feeling, then, there results a remarkable dialectic between object-connections *in terms of consciousness* and widespread object-disconnections in *factual* terms. Naïve people seldom realize this inconsistency. Socially they expect that their fellows feel like themselves, so that the content of their feeling acquires super-individual, i.e., objective sanction. Individually they attempt to cling to the content of their feeling without regard for changes in the objective situation: this is the well-known "conservatism" of feeling.

It is a case of complete inner transformation when the individual sees through false objectivity and consciously *affirms* the subjective nature of feeling. Feelings are then not "merely subjective," i.e., misrepresentative of their object, but "fully subjective," i.e., *a mirror to the subject*. Only on this level does the individual arrive at that "subjectivity of experience" from which our discussion set out.

The transition to this subjectivity of experience is plainly evident in many adolescent diaries. The adolescent who has a crush on someone is frequently far less concerned with the object of the crush than with the particulars of his feelings.

There is a modern theory of feeling that pushes this principle of experienced subjectivity to the extreme; it is the "emotionistic" doctrine of Felix Krueger and his Leipzig school.

According to Krueger, mental wholes are arranged in an hierarchy; there are part-wholes (particular patterns and structures) that vary in extent, and ultimately one total mental structure which as such possesses a unified quality; this is *feeling*. Since the subject is by nature mentally a whole, feeling is immediate with the subject, or, if we understand Krueger correctly, is identical with him; there is

no way other than feeling by which the undivided personality has consciousness of itself. Viewed in this way, however, the salient part-wholes of perception, thought, etc. lose their independence and their proper scope. They have but the nature of appendages, being encircled and molded by the dominant feeling. By virtue of this totalized aspect of experience feeling for its part possesses attributes that make it the effective "mentalizing" principle; full conscious amplitude, warmth, intimacy, unlimited qualitative sweep.

Krueger's theory of feeling obviously comes close to the personalistic conception, but differs from it in dealing exclusively with the realm of consciousness. The totality that is the theme of Krueger's theory is at all times the totality of *experience*. This leads to an unjustifiable setting apart of feeling, for even the totality of experience is but a part-whole that resides in the more comprehensive totality of the *person*. Those aspects of personal totality which are not conscious—unconscious modes of disposition and impulsion, modes of bodily expression—while touched upon in Krueger's theory, do not therein define the *special* place of feeling within personal activity. On the contrary, Krueger is inclined to regard feeling as some sort of fundamental mental material, in contrast with which all else that is mental takes on a secondary character. Psychology as a whole finally becomes for him a psychology of feeling, an *emotionism*, much as Herbart's doctrine as a whole was ideationism, and Wundt's theory voluntarism. Here personalistics does not follow.

Our preceding consideration has led to the conclusion that the true meaning of "subjectivity" of feeling cannot be understood by a mere phenomenal description. Progress toward the real criteria of subjectivity can be made only after an inquiry as to what this subjectified experience *signifies*; and this inquiry must go beyond the bare psychology of inner experience.

As a matter of fact, all *interpretative theories* have sought the subject of feeling in a realm beyond consciousness. For the *biological* theory that we have just investigated, the subject is narrowed down to a physical "organism" for which feelings have the significance of "signals." *Psychological* theories must call to their aid in interpreting feeling the concept of the *unconscious*, and an illustration is furnished by the schools of depth psychology.

In ascribing such a fundamental part in human life to the pleasure principle, Freud gives it a dual meaning. On the one hand, pleasure is that conscious quality which is *sought* by the unconscious strivings; on the other, it is, just as is displeasure, the *symbol* projected in consciousness of the nature of those unconscious tendencies. Thus the question of how one conceives the "Unconscious" is made the basis of explanation and the goal of interpretation of feeling; and in-

asmuch as depth psychology identifies this Unconscious entirely or almost entirely with the vital activity of urges, its conception of feeling takes on a mere biologicistic and thus one-sided character.

The "subject" to which the feeling must refer in order to be grasped as to nature and meaning, is not the unity of consciousness nor the organism in its mere vitality, but the *person himself* as an *unitas multiplex*.

CHAPTER XXIX

PERSONAL ATTRIBUTES OF FEELING

I. NEARNESS TO THE PERSON

A personalistic psychology of feeling must take its departure from the question of the position occupied by feeling within the total pattern of personal existence. The answer to this question is that the feelings constitute the domain of *embedded, and hence near, inner experience*. Here the twofold opposition maintained within the person should be recalled; that of life and experience on the one hand, and of embedding and salience on the other.

Experience first arises when life ceases to be simple and matter-of-fact; consequently it always represents but a portion, and never the whole, of life. Now since feeling is of a piece with experience, it is not identical with the person himself, even though of all modes of inner experience, it is nearest to him.

The specific "nearness to the person" of feeling may be defined through recourse to our second pair of concepts. As *unitas multiplex*, the person involves a constant co-existing and succession of *salience* and *embedding*. Special features, emerging from the totality, become delimited as activities and patterns; though they are in line to become independent in their own right, they remain held by the unity and transfixed by the totality, for they have existence and significance only as aspects of the person. This rhythm of salience and embedding extends to physical activities as well as to mental processes.

As a process, salience progresses step by step. Its *positive* significance for the person is the increasing inner variegation, patterning, concentration and objectivation. At the same time, it signifies in a *negative* way progressive *removal* and alienation from the original unity of the person, de-subjectification, and de-vitalizing. Theoretical and practical activities of the person tend by nature to become salient; all *cognizing* and all *acting* require the isolation of delimited, organized constellations and courses of action from the personal totality.

But the path toward the independent establishment of salient items can never be followed all the way, since allegiance to the person must continually be attested through the reverse trend of *embedding*. This applies also within the domain of *experience*. Salient conscious patterns and structures do not float about in detachment, but rest

upon a background by means of which they are indissolubly rooted in the parent soil of the person. *These experiences of embedding are the feelings.*

The following table discloses the "personal locale" of the feelings.

I <i>Life Devoid of Experience</i> (<i>Sphere of the So-called "Unconscious"</i>)	<i>Life as Experience</i> (<i>Sphere of Consciousness</i>)	
	II <i>Embedded Experience</i>	III <i>Salient Consciousness</i>
Automatisms Instinctive Actions Mneme Dispositions	<i>Feeling</i>	Cognition Acts of Will

An analogy may be made to a *mountain range*. The peaks (under III) appear to stand out from the earth as sharply defined separate structures; but they are not separate from it, being held up by the same mountainous mass (II) which, while visible itself, displays no shape of its own nor any sharp edge above and below; it is very near to the earth and is rooted, along with the peaks, in the invisible ground common to them all (I).

The separating of embedding and salience (II and III) is possible only by virtue of an abstraction. It will be shown that it is the *tensions between embedding and salience*, that is, the dynamic relations of the sphere of emotion to the realm of intellect and will, which are important. But at the same time, feeling, in accordance with its position in the table, proves to be the *mediator*; it is especially near to the unconscious regions of the person (I). Through this two-sided relationship feeling becomes embedded to varying degrees. Feeling that is wholly fused with the person, which is given over to the *person* as part of his makeup, is called his *affectivity*. Feeling that is associated to a large extent with salient conscious contents, which is joined to the parent soil, as it were, only as a minute root-hair of the salient object, is called the *feeling tone* of the impression. In between are the affective states and emotions that lie near the affective pole, and the particular feelings that lie near the objective pole.

Closely connected with the embedded quality of feeling is the attribute of *formlessness* (*Ungestalt*).¹ Professional psychology has

¹ This feature of emotional activity has always been strongly emphasized by collective wisdom, by poets, and by philosophers outside of professional psychology, with different evaluation. The extreme fluidity and diffuseness of feeling has been *denounced* in contrast to the crystal clearness of thought and action. The inwardness and creative boundlessness of affection has been *praised* in contrast to the rigidity of concepts and deliberate purposes. A modern conception of the latter appraisal is portrayed in Klages' notion of "the intellect as adversary of the soul."

never been able to do justice to this affective phenomenon because its categories were derived from the treatment of the *salient* contents of consciousness and cut to their pattern. But these categories do not fit the feelings. Feelings are not mere "elements," as the older psychology believed; and they are not "Gestalten" and "structures" in the terms of the new psychology.

Personalistics was first to emphasize the fundamental importance of the fact that "wholes" do not occur solely as homogeneous constructions. The most genuine whole of all, the person, is always a mixture of constraint and freedom, definite actuality and indefinite potentiality, in short, Gestalt and Ungestalt.¹ Likewise within personal consciousness, while the principle of structuration is being manifested in the functions of cognition and will, inner experience in terms of *feeling* plays the part of Ungestalt. This patternlessness of the feelings cannot be directly described, for any attempt to put it into words would be a crystallization. We can seize upon this attribute only in an indirect way.

The double reference of feeling to embedding and salience forms the core of Jonas Cohn's theory of feeling, which is in some ways related to the theory here presented. Cohn gives the following definition: "In its extended sense, feeling is that which is diffuse, fluid, and contingent; a total condition of mental activity that precedes the differentiation of act and object. It is to be distinguished from feeling in the narrower sense which, emerging as the residue of this diffuseness in the form of acts, contents, and objects, takes from them a more specific and more rigid character."

Feelings have significance *for* the person, in that they conduce to personal ends as controls, signals, preparations, incentives (instrumental or teleological significance). On the other hand they have significance *by way of* the person, since they partake immediately of his nature and mirror it in a certain manner (radial or symbolic significance).² This dual significance of feeling proceeds to affect physical behavior; in so far as feeling conduces to ends, it carries over into *actions*; in so far as it represents the person, it is of a piece with *expression*.

A feeling of anxiety, for example, *signals* some danger and becomes the incentive to fight (instrumental significance). At the same time it is able to *manifest* the personal state of insecurity through a mood of anxious dread and the expressive conduct of trembling, turning pale, etc. (radial significance).

¹ See p. 112.

² For these terms see p. 306; also *Wertphilosophie*, p. 44 (distinction between instrumental value and radial value).

II. POLARITY AND AMBIVALENCE OF THE FEELINGS

I. TWOFOLD POLARITY

Only because the activity of the person maintains multiple polarized tensions may its reflection in consciousness acquire a polarized character. It is two antipodal relationships that chiefly determine feeling-experience; the telic and the dynamic.

The *telic* aspect concerns success or failure in the goal-directedness of personal life; in terms of experience this corresponds to the antithesis between feelings of pleasure and pain. Here a biologicistic overemphasis upon the concept of purpose must of course be avoided. It is not simply a question of the organic furthering or hindrance of vital ends, but of *every* end devised by the person, his total entelechy and the introception of world values.

Since any given process in the person is related to the most varied ends, the feeling-tone it possesses is equivocal. Thus the drinking of an alcoholic beverage may afford enjoyment because this conduces to the temporary enhancement of the vital forces and of mood, while the same action may have a negative effect upon some other end, such as frugal budgeting of one's money or the maintenance of health, and may consequently take on an unpleasant toning. *Which* of the countless purposes possible at a given instant will occupy a position in the structure of personal ends, depends not upon the nature of the objective content, but upon the person himself. There is no possibility whatever that the fanatical teetotaller, to whom the struggle against the ruination of humanity by alcohol has become an obsession, can ever find pleasure in alcohol; if he nevertheless has to make use of it for some reason or other, his feeling is solely one of aversion. And the ascetic whose life aim consists in the killing of desire, experiences pleasure when inflicting pain on himself in furtherance of this end, while the intensity of the attendant physical pain is remarkably decreased and may even become subliminal.

As opposed to the biologicistic theory of ends, which has regard only for generalized organic ends (p. 523), the personalistic theory relates the pleasant and painful toning of feeling to the *end dominant at the time in the structure of personal ends*. "Dominant" must not be taken to mean *known* as the ruling end; experience in terms of *feeling* is the sign of this predominance. One who does not know that he is an aesthete proves himself to be one by the intensity of his lively aesthetic pleasure or displeasure over works of art, scenery, and people.

This shows conclusively that pleasure or the opposite possesses radial significance over and above the significance in terms of end;

the internal goal structure of the personality is revealed through the *selectivity of pleasure and pain*.

Naturally this personalistic theory would not contest the fact that there are numerous *generic* connections between specific personal ends and the feeling tones of pleasure and pain; this is true especially of those ends the fulfilment of which pertains to self-preservation. The necessity of breathing stale air is a painful experience for *every* one, regardless of the structuration of his goal system in other respects. Then too, there are typological principles (cf. the above example of the aesthetic type). There are also developmental principles; the transition from childhood to adolescence is characterized among other things by the bringing of entirely new domains of activity within reach of susceptibility to pleasure and pain. But the higher the level of the individual's organization, the more strongly individualized is the goal structure and the more subjective his inner experience of pleasure and pain. This is important for characterology.

The *dynamic* polarity in personal life is determined by the oscillation between a predominant expending and accumulation of energy. This polarization is precipitated in feeling as the experience of *excitement* or of *tranquility*.

The antithesis of "excited" and "quiescent" feeling is purely formal; it may be connected with any sort of feeling content. On this account either of the two dynamic attributes of feeling may modify both pleasant and unpleasant feelings. We are thus confronted with the intersection of the two pairs of attributes, which brings us a step nearer to the actuality of concrete experience.¹

So long as any dominant but as yet unrealized end controls activity, feeling is of the nature of *excitement*, having a pleasant toning on approach to the goal and a painful toning on recession from it. As soon as the activity is concluded with respect to the dominant end, the feeling takes on the nature of *tranquility*, having a pleasant toning on fulfilment and a painful toning on non-fulfilment. If we call the first class of feelings "*transitive feelings*" and the second class "*resultant feelings*,"² we may present them in tabular form.

This "four-field table," which we shall refer to on later occasions, should not be viewed in the manner of the older classifications of the feelings, as if it put every feeling in its exclusive place and characterized it completely. Here the feelings are merely grouped *from the point of view* of two pairs of polarized attributes which, though they are of great significance, are not the sole constituents; a number of other paired attributes (a few of which will be discussed) are left out of it, as are non-polarized and ambivalent feelings.

¹ See the analogous alternative in Wundt's scheme of feelings (p. 516).

² *Weggeföhle* and *Ergebnisgeföhle*.

With these reservations, the table can be of considerable utility. Above all it shows that there are two different sub-classes of pleasant feelings (as also of unpleasant feelings). As long as "pleasure" and "unpleasure" were regarded as unified ultimate categories, the second

	<i>Pleasant Feelings</i>	<i>Painful Feelings</i>
<i>Transitive Feelings (exciting)</i>	Pleasure in: Functioning Working Struggling	Pain of: Functioning Working Struggling
<i>Resultant Feelings (tranquilizing)</i>	Pleasure from: Fulfilment Success Triumph	Pain at: Failure Disillusionment Defeat

pair of attributes was not accorded its proper standing. The fact is also revealed that the relationship of path to goal is not the simple one of motion to rest, but one of excitement to tranquilizing, this last being equally a *process*. Without it, the condition of gratification and satisfaction with the goal, which is in itself stable, could not be attended by pleasurable experience, nor indeed by any experience at all; it would be a state of having lost oneself in unconsciousness. Final failure to attain the goal would likewise not be unpleasant experience, but would no longer have any conscious equivalent, and would spell termination and annihilation.

It must be recalled that feeling does not reflect the whole of life, but first makes its appearance when the unconscious security of life is upset. The pleasant feeling of advancing convalescence is much stronger than that of untroubled health, and the feeling of pleasure in overcoming moral temptation is more intense than self-satisfaction over an easy conscience. *What is taken for granted does not call for feeling, even pleasant feeling.*

This conception threatens to lead to paradoxical consequences. It appears that only the path along which the individual approaches the goal, but not the goal as attained, can afford pleasure; pleasure is denied to conquest, success, the completed task, the gratified wish. This outcome stands in sharp contrast to the common-sense view, which ordinarily places resultant feeling far above transitive feeling.

In reality both have their place, resultant feeling, however, holding sway only in so far as and so long as an attainment remains labile.

A successful outcome has a marked pleasant toning only in *contrast* to previous privations and hardships, and to the concomitant environ-

mental conditions. The feeling of pleasure diminishes the more the gratification becomes fixed, forming the zero point of departure for new strivings and gratifications with their attendant new feelings.

This progressive shift is manifest in the case of the athlete who keeps trying for records. Every record achieved is enjoyed intensely as a success, but the winner cannot rest for long on his laurels; the feeling of triumph becomes weak and finally insipid and must be replaced by new pleasure of prowess until a still higher record permits him to enjoy anew a surpassing of himself and of his rivals. The same thing holds for the research worker, who does not dwell on the joy of making some discovery, for the politician who strives to enhance each position of power he achieves, and for the capitalist whose every profit is an incentive to get more.

This passing off of resultant pleasure has often been made use of by pessimistic philosophers as a weighty argument. And they would be right, if the meaning of human existence were essentially a state of repose rather than activity, gratification rather than striving for gratification.¹ But it is clear that resultant pleasure represents simply a temporary resting stage within the current of activity in which the possibility of struggle and approach to a goal is itself attended with pleasure. Certainly an artisan's joy in work would vanish if attainments did not appear all along the way; finished pieces of work, recognition, compensation. On the other hand, however, these marks of "success," which are rare, to be sure, in many activities, and which are diminished in effect by many failures, cannot alone explain the close bond of feeling by which workers often are attached to their work; this depends in part upon the more deeply embedded and hence less readily comprehensible affective states of joy in acting and pleasure in producing, which belong to the transitive feelings.

Correspondingly, in the case of *feelings of pain*, the most intense sorrow, grief over the death of a loved one, can retain its full intensity only so long as the contrast with former companionship and the dreariness of familiar surroundings are involved in the feeling. The very finality of the loss normally constitutes a new *state* of living without the dead one; and in becoming static, the feeling of pain takes on the more and more quiescent character of grief, of longing, until at last it dies out altogether or nearly so. How different it is with the painful transitive feeling of torturing worry over someone who is deathly sick, the intensity of which increases as the dreaded end draws nearer. In the proverb "Better an end with horror than horror without an end," the two kinds of pain are forcefully characterized.

¹ The distinction made by the philosophy of value between feelings of "struggle" and feelings of "success" is treated in detail in *Wertphilosophie*, pp. 216 ff.

2. ASYMMETRY OF THE POLES OF FEELING

Wherever opposite poles were located in mental life by the older psychologies in analogy to geometry, their symmetrical arrangement was taken for granted. But an essential feature of *personal polarity* is its asymmetry; the two items that constitute opposite poles show qualitative differences besides mere opposition.¹

The asymmetry of the paired attributes excitement and tranquility may be gathered from the preceding discussion; the transitive feelings are the more deeply embedded constant accompaniments of active striving, producing, seeking, and struggling; while the resultant feelings of success or failure represent less frequent and more strongly salient bits of experience that interrupt and point up the continuity.

Of greater importance, however, is the asymmetry of the other pair of attributes, since the false assumption of symmetry for pleasure and displeasure has consistently led to disastrous consequences. We have already called attention to the view in which displeasure is regarded as simply the photographic negative of pleasure, and in which it was even thought possible to take a mathematical balance of the feelings in their opposite directions (the hedonistic calculus).

The conscious phenomena of pleasure and pain are bound to be thrown out of symmetry by the diverse relations to personal *ends*. As we have seen, pleasure is related to positive approaches to goals, and to fulfilment. But not all approaches to goals nor all fulfilments in human activity require mental representation in the form of pleasure. On the contrary, the sphere of unconscious activity is characterized to a considerable extent by meaningful striving toward goals (consider instincts, and habits that have become automatic); only a relatively small fraction of positive goal-activity is translated into pleasant inner experience. On the other hand, as an indicator of activity running counter to goal and to meaning, pain occurs *in any case* where these exceed a certain degree and consequently require some conscious signal. Pain is therefore more insistent than pleasure. This obtrusiveness of the negative class of feelings has often been recognized. It has been pointed out among other things that all along the line, languages have a larger number, a finer shading, and a more frequent usage of expressions for sorrow and pain, worry and fear, etc., than for pleasure and joy. The pessimistic conclusion from this circumstance is obvious, but this is justified only in so far as the intensity of *experience* is made the measure of the meaning of life. If personal life is regarded on the other hand as something prior to and of greater empire than inner experience, the following formulation is reached:

¹ For an example consult p. 95.

The meaning of life is attested in such a positive way by unconscious controls that it requires pleasant feeling only as supplementary positive goal-references, but unpleasant feeling in the case of any marked deviations from the goal; in short, the validity of the meaning of life is not accurately determined by the asymmetry in feeling.

A pronounced consciousness of symmetry in polar feelings is in evidence for only the most superficial emotional reactions. The pleasingness or unpleasingness of colors, the agreeable or disagreeable taste of food, may be felt as "contraries" which are distinguished primarily by the plus or minus sign. But this no longer holds for love and hate, for respect and contempt, for self-satisfaction and remorse, for religious exaltation and contrition. While the opposition of the members of each of these pairs is experienced, so too is *the positive character of each member*. Viewed in its contrast to love, hate is a feeling with its own specific nature; specific in immediate experience, specific in the way in which it is embedded in the total person, specific in the incentives to which it gives rise and the forms of activation it assumes. The truly characteristic feature of the feeling of hate would be lost if it were treated as a negative counterpart of love, and similarly for all the other paired feelings.

Finally, there are feelings for which there is no polarized counterfeeling at all, much less a symmetrical one. What pleasant feeling should be opposed to a painful toothache? Or grief for a loved one now dead? What unpleasant feeling should provide the counterpart of the quiet, prolonged enjoyment of a Beethoven symphony?

3. AMBIVALENCE

If pleasure and unpleasure were clearly opposed qualities, they would have to compensate and cancel out whenever aroused by an identical experience. This is out of the question. No gray results from the black and white of the feelings, no indifference from the rivalry of pleasure and pain; what does result is a new complexion. This is a feeling altogether different in kind, an inconstant coincidence of pleasure and unpleasure. For this attribute of feeling the term "ambivalence" (introduced by psychoanalysis) has become customary.

It is altogether possible for some personal activity to be meaningful with respect to one end and contrary with respect to another, and hence to reveal aspects of both pleasure and unpleasure when precipitated as feeling. Indeed, it must be regarded as an exceptional case when one single purpose is reflected in consciousness, making the pleasant or unpleasant toning completely clear-cut and plain. From our example of the fondness for alcohol we may recall that all is not entirely well with the drinker, however much he may enjoy the

pleasant taste and the effect, because feelings that point to the future are involved.

The designation "ambivalence" applies primarily where a kind of *unstable* equilibrium is reached between the two moments, and an inner strain results. When children hear ghost stories told at twilight, "it makes them shudder." This is not the pure unpleasure of dread, nor pure sensual pleasure and curiosity, nor yet the sum of the two, but an authentic, pronouncedly ambivalent feeling, whose bodily accompaniment is a "pleasant tingling." Related to it is "anxious pleasure," as evidenced by the person bathing in strong, icy surf on the approach of each successive wave, or by the boy who ventures onto thin ice. Anxious pleasure has been described by the psychoanalysts principally in sexual experiences, whence the generalization that any admixture of pleasure with anxiety must be lustful feeling. There is no basis for this interpretation; any pleasure may fuse with anxiety, above all the pleasure of being rash; soldiers making a charge, mountain climbers, fliers, etc., are well acquainted with ambivalence of feeling.

When psychologists first became cognizant of ambivalent feeling the poverty of every proposed classification that sought to list all the feelings exhaustively under the head of pleasure or of unpleasure became manifest. A few examples may be mentioned. First there is that affective ambivalence that is derived from the relationship of smallness and largeness. The individual has unpleasant feeling in regard to his own weakness and inferiority; and at the same time pleasant feeling in regard to his dependence on someone stronger, and the ability to look up to him; there result the ambivalent feelings of youth and of followings, and religious feeling, which is at once the fear and love of God.¹ In the field of aesthetics the ambivalence of the small and the large takes on an analogous shading; in the impression of sublimity on contemplating the ocean or a Gothic cathedral, the consciousness of the own smallness is fused with a feeling of grandeur through an emotional identification with the object. In the realm of morals the overcoming of self is almost never pure joy at one's own victory, but partly renunciation: unpleasant deprivation of what occasioned the temptation. Conversely, in the acknowledgment and confession of sin, many a pleasant component is involved besides pain at one's own wickedness; the feeling of being unburdened and freed, and occasionally, even vanity and haughtiness at being capable of unconventional thoughts and actions. Righteous indignation is another example of ambivalence in moral feelings.

¹ On having the vision of the Earth-spirit, Faust says: "In that blessed moment, how small I felt, and how large."

III. THE GRADATION OF FEELING

Despite the qualitative uniqueness of every feeling, it is none the less possible to compare the feelings with one another with respect to degree, and thus to attach a greater or lesser quantity to them. Naturally the quality is not unaffected by this process; love, as it increases, changes not only in intensity, but also as to its peculiar affective quality. But the quantitative aspect may nevertheless be made the object of separate study.

I. FORMAL GRADATION

Viewed formally, feeling is graduated according to intensity, breadth, and duration.

a. Intensity is the distance from the feeling threshold, that is, from the personal state at which feeling is just manifested (or ceases to be manifested) as feeling. By virtue of its mediate position (as shown in the tripartite table, p. 531), feeling has thresholds in two directions; these mark off respectively the region of unconsciousness and the sphere of salience in knowledge and action. For this reason the intensity of those feelings that just emerge from the unconscious (or are just about to lapse into it) is weak, as is likewise that of those feelings which are largely transformed into knowledge and action. Within the threefold scheme, then, the following schematic *affective intensity curve* results.

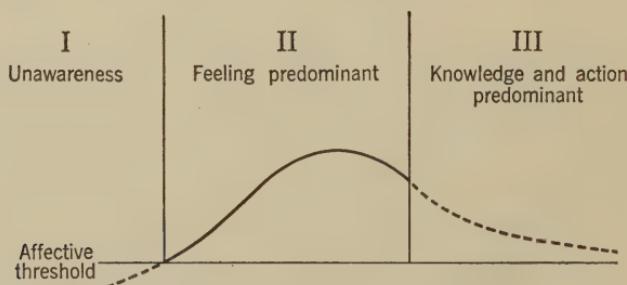


FIG. 20. AFFECTIVE INTENSITY CURVE.

An individual is gradually brought out of his every day mode of living into an unadjusted, objectively menacing situation. At the point where immediate, automatic functioning (I) becomes inadequate, a *mild* feeling of insecurity at first arises (beginning of II) which develops into uneasiness and fright, perhaps into desperation (middle of II). But as soon as he contrives to take cognizance of the situation and to set in motion actions suited to doing away with it, or in other

words, the closer he gets to the sphere of salience (III), the more his fright *loses* intensity until it is finally forced from consciousness by cool, objective decision and action.

The following example illustrates changes of affective intensity in the reverse direction (from III to I). After deliberating, an individual chooses an occupation and acquires the pertinent knowledge and facility by dint of numerous salient acts (III). From this cool, objective relation to his occupation there gradually grows an affective attachment, a love of the occupation, or perhaps an aversion toward it (II). The intensity of feeling increases, until soon the peak is reached. If he continues on in the occupation, he no longer requires this intense affective experience because habitual attachment and automatization set in. As it becomes more a matter of course, the intensity of the affective experience decreases, sometimes to zero; the individual settles down to a toneless occupational pace (I).

This schematic intensity curve reveals two points:

(1) The maximal intensity of any feeling lies midway between its transition to unawareness and its transition to conscious salience.

(2) Changes in intensity are never *merely* changes of degree, but are also changes of affective quality; with change of intensity there is displacement of the entire position of a feeling within the personal structure.

Are exact *determinations of affective intensity* possible? As long as we keep to the purely psychological domain, there is no *absolute measure* for this intensity; it can never be said that a feeling has this or that much intensity. "Objective" measures may be set up only for the *manifestations* of feelings, be these physiological expressive indications (changes in heartbeat, strength of tremors, etc.), or be they actions (excessive movements of defence or attack which affect the entire body disclose a stronger affective intensity than do orderly and calculated, that is largely salient, actions).

Yet in the purely psychological domain *relative comparisons of intensity* are possible; one feeling may be weaker than another, or may become stronger in contrast to its previous intensity. There is some possibility of psychological *experimentation* within, to be sure, fairly narrow limits. Only those affective stimuli can be utilized in comparison of intensity for which the concomitant qualitative differences in feeling can be neglected. It thus becomes a question of producing by experimental means relatively simple feelings that are extremely close together on the curve. It is not possible, for example, to compare two feelings belonging respectively to the two branches of the intensity curve; the low intensity of a feeling which borders on unawareness is very different from the low intensity of a feeling that has largely been transformed into cognizance.

Experimental comparisons of intensity have been made primarily in the field of so-called *elementary aesthetic feeling*. Fechner did this first; many investigators have followed his lead.

Fechner tested the degree of pleasingness of rectangles; he presented several rectangles with graduated proportions of the sides and had the subjects pick out the most pleasing form, then the next pleasing, etc. The most frequent preference was for the rectangle whose sides a and b corresponded to the proportion of the golden section; $a:b = b:(a+b)$.

The method of "paired comparison" may be employed instead of the method of "choosing;" two stimuli are always presented with the question as to which is the more pleasing; by comparing one of each pair with all the others the most pleasing of all may be determined. By this procedure Jonas Cohn determined that for paired combinations of colors, the combination of complementary colors (green with red, yellow with blue) is most pleasing.

Such findings are of significance, to be sure, only so long as the feelings can be produced in relative isolation. The instant color combinations are inserted in a larger scheme, e.g., a painting, a combination quite other than that of complementary colors may afford maximal pleasingness. Embedding of feeling in personal connections may likewise displace the curve entirely. A student who is an enthusiast for his fraternity and its colors finds this combination of colors pleasing, even though it may appear to be highly unpleasing to others from the point of view of pure sensory satisfaction.

b. Affective *breadth* characterizes the scope of conscious contents that become related to the affective sphere of influence. Thus "moods" are *broad* affective states. In contrast to them an idiosyncrasy, an interest bordering on monomania, takes the form of a very narrow feeling, since it includes but a narrow portion of conscious content and does not affect any other portion.

As a trait of personality "breadth of feeling" (affective spread) occurs in those people whose feelings are comprehensive in scope. To this class belong those who love much, those whose interests are many-sided, those for whom "nothing human is foreign."

For the most part, there is an inverse ratio between extensity and intensity of a feeling.¹ A diffuse mood is broad, but of medium intensity; a keen passion narrow, but extremely intense.

c. Affective *duration* fluctuates between the momentariness of emotional nuances in trivial every-day acts, and the permanence of those affective trends and dispositions numbered among the constitutive qualities of every personality.

The relation between duration and intensity is fairly complicated. The persistence of a feeling for a considerable time can increase its

¹ A similar ratio was found for attention, p. 478.

strength until it attains stability on a high level; but it can also have the effect of weakening the feeling until it disappears; in both directions, the effect may be almost without limits. Faithfulness to a religious or political leader is an example of the former effect; on persisting this feeling may become almost an obsession. On the other hand the permanence of a situation may lead to habituation, thereby dulling the intensity of the concomitant affective state; to the soldier in the trenches the horror of the war becomes such an every day experience that the feeling is blunted down to the zero point; otherwise life would be intolerable.

2. PERSONAL GRADATION

The graduated attributes of feeling which directly express its relation to the person are depth, genuineness, seriousness, and level.

a. *Depth* is not a psychological but a personal dimension. As previously stated,¹ depth refers to the strata within the person, located at varying distances from the surface where contact with the world takes place. The "deeper" a content or process lies, the more it represents the person himself, and the less it is due to the outside world alone. This depth involves all modes of personal existence; as applied to *experience* it constitutes an important quality of feeling.

The deepest feelings are the most deeply embedded, signifying the most immediate precipitation of the person's essence in his consciousness.

Naturally there are no objective measures for the degree of affective depth. The subjective certainty, on the one hand, of the person feeling, and on the other the empathic interpretation by the outside observer, must take the place of objective measures. The previously discussed attributes of intensity, breadth, and duration are by no means clear-cut evidence of the depth of feeling.

Feelings are called "superficial" when they relate chiefly to the individual's point of contact with the world and vary with every change of environmental stimulation, e.g., being infected by a transitory enthusiasm of one's fellows for a certain object. These reactions too are of course embedded in the person, for otherwise they would not be feelings, but they reflect the merely momentary states and less nuclear strata of the person.

Variation in the depth to which feeling strikes may be portrayed by various domains of feeling within one individual. There are people who are disposed toward especially deep affective excitation within one definite sphere of activity (family, nation, nature, art), while their affective responses in other spheres are superficial. Of more general characterologi-

¹ See p. 93. Cf. also *Studien zur Personwissenschaft*, pp. 21ff., and 120.

cal significance is the *total* disposition, or its absence, toward feelings that strike deeply. The attributes of "general affective depth" and "general affective superficiality" are numbered among the most essential qualities by which people are differentiated.

b. Closely related to the distinction of depth and superficiality, but not identical with it, is that of the *genuineness* and *non-genuineness* of feeling.

The term "non-genuine" does not refer to those *simulated* feelings which do not exist at all as affective experience but must be put on by means of definite feats of expression. The evil-doer caught in the act simulates remorse ("crocodile tears"). The auditor who must submit to the reading of his friend's poems, pretends interest or even enthusiasm.

Non-genuine feelings depend not upon conscious but upon unconscious deception, and above all upon unconscious self-deception; the affective experience actually existing is referred to personal depths to which it does not belong. The enthusiasm of an adolescent girl for the high art of a tenor is non-genuine, since not aesthetic but erotic needs provide the basis of the feeling. However the fourteen-year-old hides this true affective reference not only from others but also from herself, and believes in her enthusiasm for art. Non-genuine too is the remorse of the boy who, convicted of some small misdeed, "feels sorry," not by way of true atonement, but on account of the disagreeable consequences; family disturbances, grief of the mother, punishment, etc.

A great many non-genuine feelings are *socially* conditioned. Membership in a society or group demands harmony of feeling above all else. Nothing provides stronger cohesion than common interests, enthusiasms, and inclinations. But there are forceful individual differences among *genuine* feelings, which threaten to interfere with this affective communication.¹ Fortunately the individual does not have to fall back entirely upon pretence in order to prevent this damage. On the contrary, he is able to come to a belief in the genuineness of those illusory feelings which have become proper to him through imitation and suggestion. The genuineness of the content of affective activity is consequently highly dubious for all typical adherents, hangers-on, and slaves of fashion.

The opposition of genuineness and non-genuineness is related to the radial significance of feeling; in genuine feeling the essential nature of the person is projected in a straight, unadulterated manifestation; non-genuine feeling twists the essential nature of the person.

c. The third pair of attributes belonging to this scheme, *seriousness* and *non-seriousness*, are related, however, to the instrumental signifi-

¹ See p. 526.

cance of feeling. Those feelings are serious which serve as a means of carrying on real activity, while those are non-serious which lead their own existence apart from reality. The feeling of fear in an individual who is attempting to escape from his pursuers is serious, that of a child who is playing at running away from the "wolf," is non-serious. Similar is the feeling of jealousy of the actor playing Othello.

Unlike non-genuineness of feeling, non-seriousness is permissible in terms of value; this attribute has positive significance in *play* and *art*. These two spheres are closely related in fact. In neither case is feeling the consequence of preceding activity nor is it of consequence for practical activity to follow, rather is it sufficient unto itself and content with some present expression of what is mentally portrayed. Non-serious feeling need be neither superficial nor non-genuine. The tenderness of the child playing mother to her dolls is very deep and altogether genuine; so too is the jealous feeling of the actor playing Othello while he is living the rôle of Othello. But only *while* he is living it. Non-serious feeling is exhausted in the present; it has no sort of conscious connection with the past and future of the same person.¹ An hour after the show, the actor playing Othello retains no trace of the feelings of love and jealousy toward the portrayer of Desdemona that he previously not only acted but also felt in some manner or other.

But there are many transitional and intermediate forms. When boys fight in fun the line between play and earnestness sometimes disappears, the result being the development of rivalry and enmity which also determine the behavior of the boys toward each other outside of the play situation. In the same way there are among actors and artists many who temporarily lose the sovereign attitude of play toward their rôles or productions and identify themselves seriously with the emotions portrayed.

In such cases of transference to reality "non-genuineness" readily occurs; one "plays" with one's feelings even when seriousness is required; "acting" becomes a typical mode of behavior in real life.

Finally we should mention in this connection what has been called *Ernstspiel*, a form of behavior that is serious in terms of consciousness, but playful in its personal significance (see p. 360).

d. Level. The distinction between "lower" and "higher" feelings has always been currency for the lay psychologist; professional psychology avoids it for the most part because it stands for evaluation

¹This does not contradict our former conclusion (p. 359) that the play of children has great future significance; for this significance is not coexperienced in the play affect, but remains unconscious. While playing nurse with dolls is preparation and anticipation for future maternity when viewed *personalistically*, in terms of *experience* the tender feeling is directed exclusively toward the present doll, and not toward future live children.

which supposedly has no place in a descriptive and explanatory science.

This would be fitting only in regard to moral valuation; the question as to whether feelings that are called "lower" are of lesser value than the "higher" must be dealt with by ethics, not by psychology.

Yet we cannot throw overboard that valuation which is demanded by a genetic point of view. If we acknowledge in a general way that there is an *evolution* of the individual, of the race, and of the successive species, a principle of progress is also involved; the transition from earlier and simpler to later and complicated evolutionary forms becomes likewise one from the "lower" to the "higher."

In this sense the application of terms describing levels may also be justifiably made to the feelings, and indeed must be made. "Lower" feelings are those assumed to occur at lower stages of development; "higher" feelings are those occurring only at higher stages of development. And since at these higher stages the phenomena of the lower are not extinguished, but form a permanent background for higher development, feelings on both levels operate side by side, in conjunction, and in a contrary manner.

This is related to the modalities of life: the biosphere, the objective sphere, and the introceptive sphere.¹ The "lower" feelings accompany the *vital* functions which human beings have in common with sub-human forms of life, such as nutrition, reproduction, growth, disease, defence, adaptation, etc.

On a higher level are the feelings of the objective sphere. The beginnings may be found in animals (curiosity, attention, familiarity and strangeness), but they attain their full development only in human beings. Since *knowledge* of the objective world is a central activity for the latter, they experience *intellectual* feelings in great variety: astonishment, the desire for knowledge, problem "pain," joy at knowledge, etc.

The highest stage is provided with those feelings that accompany the *introduction* of values; the aesthetic, ethical, religious feelings, as well as all those which are connected with the actual production and enjoyment of culture. They are proper to man alone, and are late products of development.

¹ See pp. 72ff.

CHAPTER XXX

THE TEMPORAL REFERENCE OF FEELING

I. THE TIME DIAGRAM

An account of attributes such as that presented in the preceding chapter cannot do justice to the totality of affective activity. It takes another sort of approach to give due place to each affective phenomenon and to the aggregate of affective phenomena as concrete wholes. This approach is provided by *the course of personal activity in time*. The individual's personal time extends from the present toward the asymmetrical poles of future and past; feeling maintains intimate relations with these three temporal phases. While all feelings as experienced are part and parcel of the present, their *personal significance* extends far beyond this purely factual temporal bond. Besides "present feelings," which have special reference to the present in terms of inner experience, there are also feelings that "reach ahead" into the future, and feelings that "reach back" into the past.

In each of the three time-references feeling occupies the mediate position between unconsciousness and salient consciousness which was depicted in the tripartite table on p. 531. In order to summarize the various connections we now extend the table in the following way.

EXTENDED TRIPARTITE TABLE

	I <i>Unconscious Activity</i>	II <i>Embedded Inner Experience</i>	III <i>Salient Consciousness</i>
<i>Present Reference</i>	Reflex action	<i>Present feeling</i>	Effectuation of perception, thought, production, action
<i>Future Reference</i>	Instinctive action	<i>Anticipatory feeling</i>	Purposive design, planning, setting of problems
<i>Past Reference</i>	Mneme	<i>Retrospective feeling</i>	Memory

II. PRESENT FEELING

Let us commence with an illustration. For the first time in his life an adult goes to court, as a witness. This state of affairs induces affective experience which must be stretched to cover the present constitution of his person and the situation itself. The trend of this inner experience may lean more to the one center or to the other; in this manner there arise shadings of experience which may be arranged in a *scale of increasing salience*. Let us pick out four degrees, which might be expressed by the subject somewhat as follows:

(1) "I am uneasy." (2) "I do not feel easy hereby." (3) "This is a disagreeable affair." (4) "The man in magisterial dress with the forbidding manner in the high seat, this long waiting, the compulsion to testify under oath, have a disagreeable effect on me."

In (1) all that is asserted is the condition of the person as an attitude without an object. In (2) there is consciousness of the occasion for this state. In (3) the oppressiveness of the experience is given an objective twist, the object being still experienced diffusely as "this affair." Statement (4) finally divides the situation up into many objective aspects which, with their special feeling tones, are no longer completely merged into the general attitude.

I. FEELING-STATES, MOODS, AND EMOTIONS¹

a. The form of present feeling which is nearest to the person and most deeply embedded is consequently the bare "feeling-state," a total mental complexion that cannot be described more closely. Its vagueness may even reach that point at which the alternatives pleasant and unpleasant are not clearly applicable to it. An entirely pure feeling-state, that is, one without object or reference, is naturally conceivable only as a limiting concept for normally developed mental activity; it is approached most closely in the state of lethargic slumber, in falling asleep or waking up, and also in disease. In the most primitive stage of development, e.g., in early infancy we must assume that it plays a considerable part, since symptoms of salient mental patterns are almost completely lacking.

Attempts have often been made to *analyze* feeling-states, giving particular attention to the organic conditions involved in them. These doubtless contribute to their quality. The individual has a different feeling-state at times when the digestive process is not entirely in order or the muscles are fatigued or the heartbeat is quickened, than when his organs are functioning normally. But we must not try to locate such organic influences in consciousness as if it were organic sensations of the digestive, circulatory, and other systems that con-

¹ Zumutesein, *Stimmungen, Affekte*.

stituted the "effects." To do so would be to distort the diffuse and unlocalized quality of *pure* feelings. We have no right to postulate constituent conscious phenomena of which no trace is given in perception. The healthy individual who feels neither a racing heart, pains in the stomach, nor labored breathing, still has his "feeling-state" and the influence of heart action etc. is exerted entirely below the threshold of consciousness. Any change in functioning, e.g., quickened pulse, first results merely in a vague unsettling (as in constrictions about the chest); only on further increase of the trouble does a special organic *experience* become salient ("I feel my heart pounding"), thereby bringing about a certain structuring of the feeling-attitude.

The same thing holds for the effect of *external* influences. The individual feels differently in a large, sunny room with gay wallpaper than he does in dark, cramped quarters, although the cause of the changed total feeling need not come specially to consciousness.

As the mode of experience nearest to the person, the "feeling-state" is a representation of the person to the person; it is the way he becomes aware of himself now and here in this present situation. "I am sad" means not only that a feeling of sadness is present, but *I* am the one who is sad; in my sadness I experience the fact that I am in some way altered.

It is not the total person, to be sure, that enters into this experience, for neither the embedded, self-evident references to the world nor the salient regions of knowing and acting are contained in the projection. What is reflected in it is rather the *state of tension between embedding and salience* that relates the person to the world; the manner in which he is coming to deal with himself and with the world.

This self-portrayal also remains a portrayal to others; the tension set up is manifested in the form of *expression*. The mental and the physical are never so indissolubly connected as in the relationship of affective state and expressive posture, affective excitation and expressive movement. As a personal state happiness is reflected in a fluid and expansive motility which extends the sphere of the person spatially and dynamically and is revealed to others through posture, animated voice, outspread arms, movements of approach etc. It is similar for any sort of affective state. But this *separation* of expression and experience can be made only from without; it does not exist for the person who is subject of the feeling, to whom happy feeling and lively movement of the limbs are interfused.

Within the feeling-states two characteristic kinds may be distinguished according to their more static or dynamic character: i.e., moods and emotions.

b. A *mood* is a cast of feeling possessing a special quality that persists over a period of time. But its duration is not sharply

limited (it can usually not be told at what instant a mood begins or ceases); and as to quality it is not restricted to definite regions of consciousness. It possesses a kind of *pervasive presentness* within the person, spreading throughout the whole sphere of inner experience like a gas which not only encompasses all objects but permeates them with its odor. Even when it is a case of some one salient experience setting off the mood (good news, an examination successfully passed, etc.), the feeling does not remain attached to this object as its "feeling-tone," but *radiates* to everything at hand. Then the least glint of light brings joy; people to whom one is ordinarily indifferent are jovially hailed; there is an inclination to treat lightly or to dismiss causes of annoyance—the whole world takes on a new appearance.

There is perhaps no more telling argument against elementaristic psychology than this dependence of all these special forms of experience on the mood of the person.

The German term for mood, *Stimmung*, is borrowed from music (= tuning); and this is indeed a suggestive metaphor. The mental atmosphere vibrates as it were at a definite frequency; and the individual ideas, thoughts, needs, wishes, and other so-called "elements" are brought into harmony only if they are in resonance with the keynote of the mood. Whatever keeps stubbornly to its own rhythm is either shunted out of experience altogether or lingers on as a neutral or contrary foreign substance at the edge of consciousness. The vibration of the total atmosphere, however, has considerable power to "re-tune" the separate salient items and thus to give them sound.

There are, of course, many different degrees. The more definitely the conscious contents are *objectified*, the less ready they are to become modified by moods. This is likewise true in the domains of knowing and acting.

The evidence of perception, the stringency of a logical demonstration, these may be transformed by a mood only with difficulty; even the happiest mood cannot spirit away an accident that occurs before my eyes nor the knowledge that I have made an error in calculation. But it can hold its own where the salient contents are still ambiguous and hence open to subjective interpretation. In the happy mood of an excursion, the members of the party scarcely heed a small cloud that appears on the horizon; only a killjoy who is going along against his will will in his spite regard the cloud as the herald of a change of weather for the worse. The mathematician must acknowledge an error in calculation in spite of his mood; but his appraisal of the seriousness of the mistake and his hope of correcting it may be determined by mood.

Similarly, in practical affairs where strict obligations and compulsions operate as objective incentives to action, the current mood

will be far less in evidence than where action is decided spontaneously. A depressed mood may raise insurmountable obstacles, while an exalted mood facilitates decisions and power of will.

The peculiarly atmospheric nature of the mood has even the effect of not always keeping within the bounds of the person. It radiates to the objects with which the subject is connected. The mood occasioned by sunset is not solely *my* mood on viewing the setting sun, but a common mood of world and person. When the situation puts me in a mood at a funeral, this is not merely a mood produced in the individual, but also a sympathetic phenomenon: being in harmony with the mood of the others and forming a unity with it.

For the classification of moods the four-field table (see p. 535) proves of service. For moods too are located in reference to excitement or tranquility on the one hand, to pleasure or pain on the other. (The boxes in the following table contain but single examples of the various moods.)

FOUR-FIELD TABLE OF MOODS

	<i>Pleasurable</i>	<i>Painful</i>
<i>Active Moods</i>	Animation Cheerfulness	Spite State of irascibility
<i>Passive Moods</i>	Ease Quiet enjoyment	Sadness Dejectedness Resignation

c. If moods are casts of feeling, *emotions* are courses of feeling. The person-world relation is suddenly upset, so strongly that its previous equilibrium is completely interrupted, and so suddenly that the person is incapable of providing the salience that would make possible a reëstablishment of equilibrium. The result is simply a chaotic and diffuse total response of the person to the total unlikeness of the situation. What is manifested is some very general direction in the form of exultation or desperation, rage or horror. Since the *diffuse total shock* is predominant, but little differentiation is effected. The shock has a twofold mental result: (1) It cuts off the previous orderly course of activity; all moods, with their relatively calm operation, which have been maintained within the person, and all purposes and plans that were in progress, cease. (2) The shock prevents establishment of a re-ordered train or the introduction of new acts of thought or will, or in short, the domination of mental processes by active performances. Every emotion is consequently a

temporary *inhibiting* of personal activity; the salient contents and processes of consciousness are either likewise enervated or left to go their own disordered way. In the first case, consciousness is "empty"; it is as if all images and thoughts were blotted out from it. In the second case, these mill around at cross purposes without direction or meaning.

The four-field table may again be used for classifying emotions.

FOUR-FIELD TABLE OF EMOTIONS

	<i>Pleasurable</i>	<i>Painful</i>
<i>Violent Emotions</i>	Exultation Enthusiasm	Rage Indignation
<i>Enervating Emotions</i>	Trance	Painful rigidity Horror

In regard to *time*, the course of an emotion (as contrasted with a mood) has a certain Gestalt; attempts have even been made to plot a schematic curve of it. On the average, the course of an emotion is characterized by suddenness of appearance, steep rise to the maximum, dropping away slowly (with occasional relapses), all within a short time. This brief duration is particularly characteristic. An *upsetting* of equilibrium can be but temporary; if it is not quickly overcome there is danger that it will become stabilized as a permanent over-balancing (e.g., a fear psychosis). A normal short-lived emotion usually settles down into a mood, which either has the same sign—annoyance proceeds from rage, cheerfulness from elation—or else changes the sign and describes the swing of the pendulum from the one side to the other. After a burst of enthusiasm comes a feeling of flatness; after a violent fit of stubbornness, a child is especially pliant and docile.

2. THE REGULATION OF BEHAVIOR AND TONING OF EXPERIENCE BY FEELING

Since feeling-states, moods, and emotions suffuse the consciousness they are not fixed to objects. We have seen that even when affectivity is aroused by some salient item of experience, there is immediate radiation to the other areas of consciousness and sometimes obliteration of the exciting cause.

There are, however, affective phenomena which remain more closely attached to *specific items*, be it to particular courses of practical action or to the salient contents of *experience*. The former are *regulated*, the latter *toned*, by feeling.

a. *Affective regulation*¹ is that ordering of action which takes place between unconscious regulation by reflexes and deliberate volition. An example is *walking* where the footing is insecure (as on a slippery sidewalk).² The continued motion is no longer wholly automatic as in the case of normal, level, and firm footing. Yet it does not require intentional *taking care*, as it would in the case of dangerous mountain climbing, or in other words, salient cognizance of the individual obstacles with a consciousness of will needed to overcome them. Rather does the walker experience his relation to the path merely as *fluctuations in his state of feeling*; by heeding these he is able to pick out on the basis of "feeling" the driest spots as the most likely places to step, and to regulate the length of his steps and his balance. He may at the same time be occupied in the differentiated regions of his consciousness with quite other matters; e.g., he need not interrupt a lively discussion at each uncomfortable spot in the path.

The *teleology* of this regulating feeling is a matter of both technique and economy; the feeling guarantees action in the direction of the goal and releases personal energy for use in other ways.

We are here concerned with those data to which the terms "semi-conscious" and "sub-conscious" are frequently applied. These designations are of dubious merit since they suggest that only the degree but not the quality of the experience is changed. For this reason, one speaks of subconscious "images," semi-conscious "ideas," etc. (cf. p. 79). In reality, however, there are no images (of obstacles in the path) nor ideas (concerning the best way to step) *at all*, but simply a background of feeling from which the regulation of movement proceeds *without mediation*. The fact that this feeling is no longer adequate when the obstacles are very serious, so that images, ideas, volitions must be made salient against it before movement can continue, does not entitle us to project such contents into the regulatory feeling.

The part played by regulatory feelings in human life cannot be overestimated. For the pathway of human life, viewed in a broad sense, is like the path in our example. It is not so uniform and even that wholly unconscious automatic mechanisms are adequate, nor is it altogether so strange and so heaped with obstacles that it can be mastered only by dint of the fully salient functioning of cognizance and will. On this account the regulating of the course of life by feeling is the principal form of every day regulation of life. Whether it be a matter of eating and dressing, of being polite before company, or of becoming skilled in one's vocational activity; below our experiencing of plans and purposes, but above entirely unconscious automatic

¹ *Gefühls-Steuerung*.

² See the use of this example on p. 378.

actions, feeling is ever alert to adjust our conduct appropriately to the changing situation.

This matching of fluctuations in behavior to fluctuations of feeling frequently occurs in such an immediate way that the *particular* feeling involved achieves no qualitative formation; it is at once taken over by motor regulation and so released, before it could impress the consciousness as clearly pleasant or unpleasant.

b. There is scarcely any affective *toning* to reckon with as long as the feeling and its release through regulated behavior belong to the same personal present. It is altogether different when the two members of this connection are temporally separated. Then the present affective experience attaches to the *continuance* of an event that becomes objectified as a salient feature of consciousness; the feeling has some share in this objectification, though not a complete one, forming the bond between this object and the affective state of the person. Consequently the situation may be expressed in terms of the subject or of the object, as the following three examples show.

- (1) I like chocolate. Chocolate has an agreeable taste.
- (2) His manner goes against me. He has an abominable manner.
- (3) I feel superior to my associates. My position is superior to that of my associates.

In the first sentence of each pair of examples the experience is essentially of a subjectifying, and in the second, of an objectifying kind. The feeling thus has quite different modes of manifestation in the two instances, in the first case as an affective response of the person, in the second, as the *feeling-tone of the object*. Everything that can become salient in consciousness can become an "object" and thus acquire a feeling-tone, including ideas, processes, and actions as well as things, and personal being as well as external events (cf. Example 3).

As objectivity increases, feeling loses much of its *Ungestalt*, motility, and pliantness, and with these, much of its nearness to the person. The subjectified experience "I like this chocolate" may be replaced by the experience "I dislike this chocolate" while the object remains the same, the change being in the state of feeling (e.g., becoming surfeited). But if I say "this is especially nice chocolate," I thereby attach the agreeable taste to the object as a fixed attribute that is scarcely different from the sensory attributes of brownness and sweetness; and I impute this attribute to the chocolate even at times when I do not taste it, or when I do not happen to relish it because of not having an appetite. The affective toning finally gives way to an highly objective judgment or valuation which is remote from the person. The wine tester, in establishing minute gradations of pleasant

flavor scarcely does so on the basis of variations in his *subjective* feeling, but by judging the sensory attributes from the point of view of their *general* qualifications for arousing feeling.

III. ANTICIPATORY FEELING

I. FEELING AS A PRELIMINARY STAGE

If conscious activity is viewed *genetically*, feeling represents an earlier stage than salient features of consciousness.

This is true first of all for the *general development of the individual*. If we may venture to describe the very first traces of consciousness in the new-born infant (and perhaps even in the embryo), we must resort to the completely unpatterned, dull feeling-state, whose fluctuations regulate the necessary changes of behavior. At first, salient conscious contents are almost wholly lacking; it takes time for individual clusters and patterns to rise out of that primal confusion, in the form of perceptions, ideas, and desires.¹

Much the same thing continues to happen in all transitions of development and new beginnings. Before the new item matures into full consciousness, achieving salience and structuration, it is heralded in affective states of dissatisfaction, of inner unrest, of aimless longing. More exact characterizations of such developmental features apply especially to the onset of pubescence; what is called *Weltschmerz* (world woe) is a disquieted and agonizing feeling-state which has neither reason nor goal in consciousness, and which is replaced but slowly by needs, strivings, and interests having definite content.

Predominance of this embedded affective experience is one of the chief marks by which the more primitive stages of consciousness are distinguished from those more highly developed. Opposed to the exact observation and logical reasoning of the latter is the other's immersion of sense impressions and of ideas in the magical strata of the self or the race; where the civilized man regulates his actions by a superimposed plan, by legal standards and moral principles, the other acts from the instinctive or traditional security of some feeling the basis of which is not conscious.

Further examples: On meeting a man I at first have a vague feeling of acquaintance, which slowly turns into identification. It is similar with the feeling of strangeness; there is first an unpatterned shock of disorientation, then a feeling of wonderment; this develops into specific questions: what happened? what is going on? and into the further problem, what am I to do? What was mere feeling at first has become reflection and will.

¹ See also pp. 125ff.

The consciousness of being ill almost always begins in a period of diffuse bodily discomfort.

2. IMPULSIVE FEELING AND PRESENTIMENT

There is more to all this, however, than mere temporal sequence. In the preliminary stage of feeling there is some inkling of what ought to occur; an indication, even an *anticipation*, of future events. In feeling there is a direction toward volitional ends, i.e., it has an impulsive character; and preparation of insights, i.e., it has the character of presentiment.

a. The *impulsive* nature of feeling is closely connected with its regulatory nature, the difference being that while direct regulation by feeling is an undivided activity of the present, here the feeling itself is of the present but its discharge in action is of the future.

We may simply refer to our treatment of the preconditions of human action (Chap. XX and XXI), for in instincts, needs, motivations of will, we constantly came upon the participation of affective experience. All such feelings, however different they may otherwise be, had in common the peculiarity of involving an unadaptedness, an urge for fulfilment, and therewith a vague directedness. The development within such feelings involves the strengthening of the urge and the clarification of the direction, until the urge may become a definite impulse and the direction a clear-cut purpose.

While I am writing a letter, something falls off my desk. At first I am not bothered and continue writing; but underneath the thoughts and actions directed upon the writing I sense an indefinable disquiet and an attraction toward the approximate place from which the object disappeared. I know neither *what* fell off nor the *place* where it is, the feeling being thoroughly diffuse, but in it resides the *tendency* to transpose itself into clarification and action. Finally the increasing disquiet makes me interrupt my letter writing, seek to ascertain the nature and location of the object, and carry out the act of picking it up.

Impulsive feeling thus has the significance of a signal and this in a broader sense than in the older biologicistic theory. This "signal theory" was restricted to the affective dimension of pleasantness and unpleasantness. Pleasantness stood for a beckoning signal to continue, unpleasantness for a warning signal to break off the previous activity (see p. 523). While this is true, it does not go far enough. For the impulse involved in feeling concerns not alone the prolonging or non-prolonging of present activity, but has *productive* significance, introducing *new* directions of activity. And these new future developments may so predominate in determining the impulse that all reference to previous activity and to its possible continuance falls away. Applying this to the psychology of inner experience, pleasant

or unpleasant toning may be more or less irrelevant compared with the directional emphasis of impulsive feeling.

To illustrate this once more by the example of the writing desk, certainly the feeling that was caused by the fallen object has an unpleasant tone which finally impels me to interrupt the business of writing in order to down my inner disquiet. But far more essential to the feeling is the indescribable *attraction* toward the neighborhood of the fallen object, and the impulse to look for it and pick it up.

To be effective, the impulsive feeling does not necessarily involve a consciousness of the goal. As in many instinctive actions, the goal may be fairly remote and quite beyond anticipation in ideation and thought; yet the individual *feels* impelled to action in the direction of the goal. Whether it is a bird building a nest or a traveler "instinctively" choosing his path at the crossroads, in every case there is a *present regulation of feeling with a future tendency but with no consciousness of the future*. (This is a definition of an instinctive act from the point of view of affective experience.)

Probably this is the only way in which the future is experienced by *animals*. It is otherwise with man. In his case a feeling that reaches into the future, precisely because it is not relieved at once by action, sets apart the future goal as a more or less salient object of consciousness.

Among the impulsive feelings of this higher order must be placed all specialized, long-range *needs*. Under the affliction of thirst that cannot be quenched at the moment there arises a more or less clear-cut image of something to drink, the specialized actions required in attaining this particular goal not being as yet consciously anticipated in any way, but remaining subordinated to feeling. Occasionally such activity is called "instinctive," but it is differentiated from pure instinctive activity by the idea of a future goal.

b. With *presentiments*, the futurity anticipated in consciousness is not an action proper to the person, but some impending event.

(1) Closely akin to true instinctive processes are those vital feelings through which approaching storms, for example, are presaged. In animals such processes are generally more marked; thus many birds manifest some time before a storm authentic changes in behavior (perturbed fluttering, the seeking of hideaways); that is, they respond instinctively to the electric tensions of the atmosphere which are usually subliminal for man. Generally speaking, man has lost this intimate contact with nature, having devised other aids for predicting weather and other means of protection from storms which make instinct superfluous. There are exceptions of an atavistic kind; some people have an extremely delicate sensitivity to coming storms.

This human sensitivity differs from that of animals by the negative fact that it does not necessarily lead to anticipatory *actions*, and by the positive fact that it is accompanied by anticipatory *knowledge*.

(2) The general uneasiness (already mentioned) which often ushers in illness is devoid of future consciousness for the small child; the outside observer alone interprets the perceptible indications of uneasiness as signs of illness. But with the more mature individual the preliminary affective stage affords a conscious signal of the future; besides having a feeling of *being* listless and dejected, he also has that of *becoming* sick.

(3) In working out a mathematical problem the mathematician Gauss once exclaimed: "I have the answer, but I don't know how to get it." This statement is highly descriptive of the rôle of anticipatory feeling in *processes of thinking*. Although the result is prepared by numerous previously completed processes of thought, the *certainty* of the result is not proved by them. The thinker himself admits that he must first find the proof in order to justify his affective certainty.

The subjective evidence that a storm is coming, that illness is on the way, that the mathematical result will prove to be correct, does not need to be less than the certainty with which we apprehend a present storm, a present illness or a rational calculation.

For most of the feelings pertaining to the future, impulsive feeling cannot be sharply separated from presentiment. The fusing of both is evidenced in the following example.

(4) "Love at first sight" is an emotional experience in which present passion which is suddenly effected is united with the certainty of being *eternally* destined for each other. At the same time, this "presentiment" works as the determinant of all future behavior toward the loved one, i.e., as an impulsive feeling.

The question as to the objective validity of *affective presentiments* does not here concern us since it is a matter of epistemology and metaphysics. But the question as to the possibility and origin of *false presentiment* is a psychological problem. The fact that subjective certainty is frequently controverted by the later actual course of events is indeed universally acknowledged. The research worker who in setting forth opinions and hypotheses "trusts too much to feeling," the "judge of people" who trusts entirely to first impressions, the superstitious person who takes his "presentiment" for prophecy, may be the victim of delusion.

The first condition of a plausible presentiment is that the futurity originates—at least partly—in the person himself. This arrangement is plainly evident in the case of an imminent illness; it can be presaged by a feeling of uneasiness, because underneath, the cause is already

troubling the organic equilibrium. A coming storm is anticipated only by those people for whom the meteorological preliminaries elicit a change in the vital complexion. A scientific discovery can be "pre-sented" only by a worker for whom the paths pointing toward the final result are prepared by previous thinking and insight. Even the premonition of an accident may occur in this wise. An automobile driver whose physical or attentive power is below par need have no consciousness of this altered state as a *present* one; on the contrary, the state is transformed into a *feeling of uncertainty with respect to the future*; "today something is going to happen to me." And since this condition also involves a greater likelihood of making mistakes increasing the insecurity through autosuggestion, the presentiment may well turn out to be accurate.

What about accidents to other people? A mother has a definite feeling that her son will run into something while cycling. There are various psychological premises for this. For reasons that do not involve the son, the mother is on this day in an especially labile mood; her not infrequent anxiety over her child consequently appears in an increased intensity. Or perhaps on going out the boy is unusually frisky and excited, and because it is a holiday the street traffic is especially heavy. The mother does not need to "notice" his exuberance nor to think about the holiday traffic; nevertheless her feeling will have the force of a premonition.

3. EXPECTANCY, FEAR, AND HOPE

The anticipatory feelings to which we now turn refer to the subjective future of one's own being. We experience that which is presently unfulfilled; but the coming (positive or negative) fulfilment is *felt in advance*.

a. In the *feeling of expectancy* the individual experiences a curious displacement of himself in time. The present is nothing but a preliminary stage of tension. The individual is already living in the future, although its "when" and "how" are still ambiguous. What is striven for is the overcoming of this ambiguity, and therewith release of tension and a conclusive outcome. When popular speech has it that a pregnant woman is "expecting," this fittingly expresses the thought that her mental outlook is directed upon the future.

For one in a state of expectancy the expected experience is extremely *near to the person*, independently of the objective time interval. There are people who while still relatively young "expect" their death, though other people in old age scarcely feel such expectancy.

The *degree of salience* of an expected event may also vary very greatly. To a child who sits for the first time in the theatre before the curtain goes up in the expectancy of seeing an unfamiliar children's play, the feeling, precisely because it is unpatterned, is more embedded

and hence more exciting than is that of an adult viewing a play familiar to him.

The difference is also *typological*. Many people, especially young people, are constantly "full of expectancy" for something to happen that is wholly indefinite; it is almost a completely unpatterned feeling-attitude of unfulfilment. Other people are so bound to reality that they have feelings of expectancy only in regard to those future events that have a high percentage of probability and a predictable form.

The strong impulse to fulfilment and release that resides in expectancy may easily lead to premature conclusions as *expectancy suggestion*.¹ Every person holds himself ready for that which he expects. The victim of shipwreck clinging to drifting flotsam keeps forever thinking that he sees a cloud of smoke or a sail on the distant horizon.

With respect to the dimension of pleasure and unpleasure expectancy is neutral; there is anxious, joyous, and indifferent expectancy, the latter being merely strain. Where pleasure or unpleasure gives a definite twist to the experience of unfulfilment, it becomes a case of hope or fear.

On this account hope and fear are still less objective than expectancy; the objective *probability* of the future event is involved to a far lesser extent. Many pin their hopes on some miracle that ought to happen contrary to expectation; others "see ghosts," i.e., are afraid of events for whose occurrence there is no reasonable likelihood.

Moreover, considered genetically, the two feelings are not equally fundamental; hope, even in its simplest mode of manifestation, assumes a certain *idea* of the future state, that is, a kind of salience. It is otherwise with fear.

b. The source of *fear* is merely an unpleasant feeling-attitude of insecurity, a growing inability to cope with life and the world, as yet independent of any *definite* menace that is threatening or imagined for the immediate future. It is necessary to differentiate between the unpatterned feeling-attitude as *anxiety* and that which has object-reference as fear. One makes *oneself* anxious, but fears *something*.² An important ingredient of anxiety is the feeling of constriction, which is physiologically conditioned (e.g., by irregularity in circulation). There is future-reference; one becomes anxious not over what is but over what is to come. Anxiety is the first diffuse precipitate in consciousness of the basic personal fact of an *alien world*. The individual is never completely adapted to his world and never absolutely at home in it; on the contrary, at any instant his continued existence in it is doubtful and must be constantly assured.

¹ See p. 456.

² Cf. *Psychology of Early Childhood*, pp. 511ff.

If this feeling of alienation from the world is specialized in terms of some *salient aspect* of the world, there results the feeling of *uncanniness* and therewith the simplest form of fear. In a pitch dark room, for example, which is neither very familiar nor yet entirely strange, the darkness is mysterious to the child. There is also no possibility of making salient any set toward what is coming; consequently the uncanny engenders fear. This fear does not at first involve knowledge of definite danger, but merely disquietment and the impossibility of appropriate regulation of behavior.

When an eighteen-months-old child runs screaming away from an umbrella that is pointed toward him and suddenly opened, it is a case of this experience. He is not afraid of the umbrella because of having had any disagreeable experience with it, but because something large and strange suddenly breaks in on his serenity and consequently has the effect of an indefinite menace.¹

Fear of the uncanny represents the opposite personal pole to curiosity, love of adventure, etc., the urge that drives the individual toward the strange and the novel. It serves as a protective measure against a too rash and uninhibited intercourse with the unknown.²

"The uncanny" does not cover all that is unfamiliar; rather is there, at least, in animals, an hereditary selection of the uncanny. (*Specific inherited fear.*) Many birds may fly about over a barnyard where there are very young chicks, and their strangeness will in no way disturb the chicks. Let a hawk appear in the sky, however, and the chicks immediately show manifest signs of anxious dread and seek protection. Despite the fact that they have never seen a hawk and have never been able to have direct or indirect experience of its dangerousness, the hawk, and the hawk alone of all birds, is "uncanny" to them. Since this feeling of fear does not require experience and since it has an adaptive impulsive character, it is to be classed as an *instinctive* feeling.

The question as to whether there are likewise specific inherited fears in human beings is still unsettled. Fear of darkness and of thunderstorms seem not to be so; they are altogether lacking in many children and where they occur they may be explained satisfactorily as general fear of the uncanny or as the effect of suggestion (cf. our example of the dark room). The fear of wild animals which may arise even in zoölogical gardens might be classed here. The odor and the noise of these animals have a specific mysteriousness about them; the feeling produced by them is perhaps an atavistic throwback

¹ For further examples of this early fear of the mysterious see *Psychology of Early Childhood*, pp. 519ff.

² Karl Groos first suggested this biological significance of fear of the mysterious.

to the time when these animals signified real sources of dread to man (hypothesis of G. Stanley Hall).

Over and above the kinds of fear thus far described is true *fear on the basis of experience*; the affective anticipation of a *known* menace. The inexperienced child puts its hand recklessly into the fire; only a "burnt child dreads the fire." In such a case the future consequence is salient to a considerable degree; one is afraid of something definite. Directness or indirectness of experience does not affect the nature of the fear. Fear of the dentist is "empirical," regardless of whether one has actually known the disagreeableness of dental treatment, or has merely heard about this from others.

Here a misunderstanding must be avoided which is derived from the old association psychology. According to this theory fear of the dentist was anticipation of a future *feeling of pain*¹ on the basis of previous experience. This is out of the question. We have but to think of the frequent judgment following some dreaded occurrence, "it was not nearly as bad as I was afraid it would be." Fear is unpleasant feeling of a *different kind* from the unpleasantness attaching to the occurrence itself when it takes place. This difference in *kind* is naturally only indicated. Fear is far more unpatterned than a dreaded present feeling. It is precisely this uncertainty and indefiniteness that the individual tries to overcome by concretizing the picture of what is feared. Along with memory, *imagination* thus plays a significant part; we might even turn the sentence around and state that next to wishing, being afraid is the chief motive power in the activation of imagination.²

Certainly the feeling of fear is caused by objective threatening conditions. But these conditions converge with *subjective* factors that determine the intensity of the feeling and the spontaneous imaginative contributions. There is also personal *disposition* to dread and fear, or "nervousness." There are abnormal manifestations of these personal states; a general anxiety about life (depression) which chokes off all joy of living and takes the heart out of activity; states of groundless fright which pertain to definite classes of objects, called *phobias*. It is no accident that these classes of objects arousing phobias match for the most part the previously mentioned spheres of the mysterious; thus rooms that lose their familiarity (fear of places), and certain animals (e.g., dog phobia). Very likely a general, abnormal anxiety which has no object or has lost its original object becomes *specific* along the line of least resistance, i.e., is attached to classes of objects for which there is some special readiness, perhaps a predisposition, for a fear response.

¹ Notice the difference in contrast with the statement in the previous paragraph.

² Cf. p. 335.

We have followed feelings of fear along the scale of salience and objectification from anxiety that lacks any object to the feeling of the mysterious and specific inherited fear, and on to fear on the basis of experience; this scale has one final point, that of *worry*. Worry is also unpleasant feeling directed toward the future, but in place of acute excitement there is protracted, unremitting tension. The lesser force and longer duration of this feeling make possible a far richer structuring of salient accompaniments, of the order of both intellect and will. "Worrying over someone," which is not far from fear, shifts to "taking care of him" which is predominantly a matter of thought and action.¹ There may even be a reversal of affective toning; the worry that a mother constantly has for her child may be entirely free from unpleasant "bother"; it may be actually pleasant.

c. The opposite of fear, *hope*, is not nearly as important a state as fear. In animals hope appears to be lacking entirely while fear is highly developed even on that level. *Human* activity oscillates permanently between fear and hope; fear, however, not only has an earlier genetic onset as already mentioned, but even where it mixes or alternates with hope, it is of more force in experience. How is this fact to be interpreted? The pessimistic explanation is obvious: there is far more to fear in human life than there is to hope for. But this view shifts the problem from subjective experience into the region of objective life, and a shift of this sort cannot have the same meaning. The objective goals of hope are for the most part also the objective goals of planning and willing, while the objects of fear run counter to the direction of one's own activity. On this account the individual feels himself delivered up to the dangerous before he can summon up a counterthrust; and in terms of feeling he responds with the feeling-attitude of anxiety, fear, and worry.

If on the other hand the attainment of future aims seems probable to us, these aims are not merely hoped for but also *willed*. In the activity of willing, however, together with the involved operations of thought and decisions, there remains but little room for any independent and extended anticipation of the same goals through bare feeling, hope included. Indeed in an *active* individual hope can occur as a *separate* affective experience only during pauses in the activity and only with reference to those factors in the process which are independent of his own will. For this reason nearly all the great personages of history have hoped for good fortune and success, but actually in such a way that their hopes did not greatly preoccupy them since they had but little time for feeling.

Only one who is predominantly *passive* can hope intensely. Dream-

¹ In German both attitudes are expressed by the same word *sorgen*: to worry = *sich sorgen um*; to take care of = *sorgen für*.

ers paint their hopes in rosy hues, but neglect to act in such a way as to reach the ends hoped for. Women whose husbands have to go to war and who can do nothing positive to protect them, have nothing left but hope. This at once illustrates the fact that hope as such is not a pure feeling of pleasure. Factors beyond control may hinder as well as further the attainment of the end; consequently passive hoping is also a form of fear. Cases in which hope crystallizes into the certainty of presentiment—"I shall see him again"—are less frequent than the opposite situation, in which fear overshadows all other feelings and leaves but little room for hope.

This reciprocal relation between hope and fear, however, also has a positive effect in the *sublimation* of fear. It is characteristic of *human* fears as contrasted with those of animals, that they may be toned down, intellectualized, and ultimately overcome, by hope. This is true in specific instances as well as in a general way. To "anxiety of living," described above as an agonizing primal feeling, the individual is able to oppose a *total hope*; hope in the fulfilment of life and in immortality.

IV. RETROSPECTIVE FEELING

I. POSITIVE FEELINGS TOWARD THE PAST

The scale of feeling may run not only from unconsciousness to salient awareness, but also in the *reverse* order. Whatever once had salient existence as experience, thought, will, or action, sinks down into the deeper strata of the person, becomes embedded, and unconscious. Midway along this road to complete unawareness is embedded affective experience. The mnemonic after-effects of previous activity function in part in a purely automatic and hence unconscious way, by acquired reflexes, habits, and adjustments; but where they linger on the level of consciousness or are in readiness to become conscious again on occasion, they function as feelings.

Thus the *affective association of the person with his past* extends much further and reaches more deeply than does his knowledge of the past. The connection of the adult individual with his childhood, and of every individual with his forbears, his race, his people, his society, his home, is warranted not only by remembrance, by conscious history, by common ideals, by definite usages, morals, and duties, that is, by salient cognizance and action, but also in a far more elementary way by feelings, however little patterning these may have.

In the beginning there is, again, a wholly vague feeling-state, the *feeling of familiarity*. This feeling connected with the constant surroundings remains in the background as long as the individual is absorbed in concentrated activity. But the slightest relaxing of

active exertion gives emotional stress to this dwelling in the well-known, and to this intimacy with the fondly held, while at the same time no details need become salient. The feeling becomes especially vivid upon a change of surroundings, even when it is merely imagined (upon changing one's residence one notices how much the former surroundings have grown upon one). Conversely, on returning home from abroad the feeling of familiarity arises with great intensity; the pleasurable feeling of "being back again" after a lengthy trip, however delightful, does not depend merely upon the fact that comforts missed during the trip can now be enjoyed once more; the particular delight rests especially in the generalized feeling that the surroundings belong to one, former contact with them having made them a veritable part of the personality.

The fundamental character of this feeling of familiarity is revealed by the very young child who even in the first few months manifests toward the mother an utterly different expressive conduct than toward strangers, during the very period in which certainly no "remembrance" of earlier encounters with the mother are present. A child of from two to three years returns exultantly to room and crib after a journey of several weeks, although there has been no sign that these things were missed.¹

The feeling of familiarity attaches to many classes of objects. With respect to *people*, familiarity leads to attachment and *love*; a love, to be sure, of a very specific sort. The "confident love" of the child for the mother or the nurse is, as a retrospective feeling, utterly different from the "erotic" form of love, which seeks the novel, the strange, the mysterious.² Between adults as well there is the feeling of belonging to each other, which depends in essence upon the effect of time. The phenomenon of fidelity is to be explained for the most part in terms of such retrospective feeling.

Spatially considered, the feeling of familiarity is the feeling of "being at home." In connection with this feeling it becomes clear that in the personal domain space and time are intimately related. The particular spatial relation that is here felt *proceeds* from the temporal relation, from the indissoluble relation to what has existed for a long time. The individual requires some region in which he feels "at home"; this he experiences as an extension of his bodily existence, as a reassuring bond between the self and the world. Or rather, it is the sum total of many regions. One feels at home in particular clothing to which one is habituated, but uncomfortable and alienated from the self in other clothing. A permanent place of residence becomes "home"

¹ On the experience of familiarity, cf. p. 206. There are many examples of the early development in the feeling of familiarity in C. and W. Stern, *Erinnerung, Aussage*, etc.

² The ambiguous word "love" has led psychoanalysis to take the two modes of feeling, which are very different in kind, as identical.

through the feeling of familiarity, the surrounding field of regular activity becoming the "life-space."¹ The broadest sphere of all is the "home region" which forms the affective background for all the separate familiar items.

Finally, the feeling of familiarity may be associated with *activity*, be it one's own activity or the life that goes on around the individual. The delight on returning from abroad to one's home region is not simply a delight in seeing familiar surroundings once more, but also satisfaction at being able to resume habitual routines, at hearing the native dialect, and joining in the local customs.

In its most elementary form the feeling of familiarity is of a completely "atmospheric" nature; it is a total mood in which the special affective tonings of people, things, and events are indistinguishably embedded. Ordinarily the individual is not aware of *what* it is that attaches him in such a peculiar way to his home region, of *why* it has such entirely different affective toning from any other, even the most beautiful, region. But as soon as he begins to make particular details of the feeling salient, the personal *historical* relation becomes plain. The landscape and a certain room are dear to him because they bespeak their past, a past which continues to the present with reference to the self.

Retrospective feeling is thus analogous to anticipatory feeling. In the most primitive stage *consciousness* of the time-reference is lacking both backward and forward; the derivation of the original feeling of being at home from the past appears in experience quite as little as the future goal of instinctive feeling. At more advanced stages this consciousness appears. It is very interesting to observe, for example, the development of a different, *historically* toned feeling of the child to the parents during pubescence, out of untroubled confident love, the new feeling being that of gratitude, filial attachment, and a sense of the family. The individual now begins to experience the *continuity* of his own life; in his present and future doings he feels obligated to and actuated by the past.

In this same stage of development a pride of ancestry is also aroused. The feeling of belonging together reaches back beyond the period of one's own existence and embeds one's own life in the succession of generations. This affective experience continues to include more and more; the feelings of race, of nation, of country are never mere experiencing of the present residues of race, nation, and native land, but are also historical feelings. These feelings are far more primitive than historical knowledge; their salience is achieved in myths, sagas, and sacred revelations, in hero-cults, memorial celebrations, and symbols.

¹ Cf. Martha Muchow's studies of the life-space of the city child.

Popular psychology has it that "feeling is conservative, while intellect is progressive." This certainly fits the retrospective feelings just discussed. In them is experienced a bond with the past which must at the same time operate as an impulse to retain the old tried and true ways. The pleasurable toning possessed by familiarity, confidence, and being "at home" is also a sign that the course should be followed in the same direction; whatever deviates from this course, especially any logical considerations that reveal the unfitness of the old way in present and future situations, finds hard going. That is why even those people who are in general hospitable to novelty and to the coming thing are conservative whenever their affections have a firm retrospective anchorage.

The validity of the popular saying is nevertheless very limited. Not all retrogressive feelings are pleasantly toned or set upon preserving the old, nor is the overcoming of resistance to the inevitable merely a tendency of the intellect; on the contrary, it is rooted likewise in feeling, specifically in anticipatory feeling. The complications ensuing require brief discussion.

2. NEGATIVE FEELINGS TOWARD THE PAST

There are two forms of retrospective feeling with unpleasant toning. The first and more simple form is the feeling of *grief*. The bond with the past is experienced in its full strength, but the bridge from past to present is broken; what has been is "past" in the narrowest sense of the word. Intimate familiarity with it can therefore be felt not as forthright, pleasurable confidence, but only as a painful *lack*.

Mnemic cleavage,¹ considered in the realm of feeling, may arise from endogenous as well as exogenous conditions. The necessity of development on the part of every individual requires the permanent passing beyond earlier stages, but emergence from these is not complete liberation from them; all advance is purchased at the cost of painful losses. Such retrospective feeling is most clearly manifested in laments for "the lost paradise of childhood."

Changes in the external environment and blows of fate tear the individual away from what he has become fond of; the emigrant who has to leave his native land behind, the relative of someone who has died, is not merely "grief-stricken" (i.e., having experience of present pain), but he also "grieves" (i.e., feels the absence of a familiar past). A milder form of this feeling of grief is *melancholy*. The lack of what has been lost is again in evidence. But there is at the same time a sense of constancy which the well-loved past transforms into fond remembrance; and against this memorial background new goals may be established; the past pales in comparison with the future.

¹ See p. 254.

But where the past is *not* cut off, instead remaining effective and determining the affective present of the individual, a new form of unpleasant toning may arise. The tendency to cling to an incident is but one direction taken by the human entelechy; in contrast and opposition to it is the tendency to adjust to the changed situation and to strive to develop new modes of activity. Retrospective feeling here comes into conflict with feeling that has past- and future-reference; the connection with the past is no longer experienced as confidence but as *constraint*, not as familiarity but as rigidity.

This ambiguity is manifested even though in a mild way, in the feeling of *reverence*. An individual who feels any reverent attitude toward religious customs or toward his ancestors would regard a renunciation of this past as a denial of his better self; yet in the background there is also the feeling that one's wishes and intentions for present and future are no longer entirely in line with the former trend.

The energy component of the contrary feeling may eventually become predominant. The habitual and familiar then arouse disgust and aversion in the individual; confident love is transformed into a halting *feeling of dependence*. The feelings directed upon the past are no longer conservative, but revolutionary; the impulses to which they give rise are to break the bond with the past, to combat it, and even to destroy the roots which give the individual his feeling of anchorage in what has gone before.

V. PERMANENT BACKGROUNDS OF AFFECTIVE LIFE

We must finally consider those aspects of affective life that reach beyond the actual emotional experiences to the permanent (i.e., dispositional) background in which the specific feelings originate. "Permanence" does not always include a lifetime; like other dispositions, affective dispositions may influence a person's immediate experiences over varying periods of time.

It is especially in the realm of affective dispositions that any separation from other areas of mental activity is artificial, not to say forced. The way an individual usually feels is so intimately fused with his striving and with his intellectual dispositions, with his modes of action and expression, that the heading under which it is treated is arbitrary. Thus temperament would fit just as well into the chapter on personal dynamics, and interests into the discussion of intellectual phenomena. In this chapter they are treated as instrumental features of affective disposition on the one hand and as directional aspects on the other.¹

¹ Since the topic belongs more to differential than to general psychology we must content ourselves with brief sketches.

I. TEMPERAMENTS

Among human beings the *capacity and readiness* for affective experience varies greatly in degree and in kind. All of those attributes which were ascribed to particular items in affective experience; intensity, breadth, depth, genuineness, seriousness, etc. may, when persistently favored within the person, become a characteristic of his affective make-up. Thus we ascribe "deep" affective activity to anyone whose feelings bear a special mark of the dimension of depth. We call a person "serious" if playful productive feelings have but small place in his mental structure.

We are best acquainted with that typological classification of affective attributes which involves the two polarized pairs of attributes of feeling: pleasure and pain, excitement and tranquility. The table in which feelings, moods, and emotions were classified¹ may also be used in classifying affective dispositions; indeed, the very first use of such a scheme was in the system of the four *temperaments*.

People in whose experience pleasant feelings are constitutionally predominant are called "eucholic," and the opposite type may be called "dyscholic" (with reference to the attitudes which the feelings generate, the "optimistic" and the "pessimistic"). This division is intersected by the readiness for excited or tranquil affective states; we thus obtain four boxes into which the four designations of human temperaments, known of old, naturally fit. The *sanguine* temperament is especially characterized by pleasant transitive feelings, happy moods, and exultant emotion. Characteristic of the *choleric* temperament are painful transitive feelings, angry mood, outbreaks of wrath; of the *phlegmatic*, pleasant static feelings, easy-going mood; of the *melancholic*, painful static feelings, mood of sadness, boredom.

TABLE OF THE TEMPERAMENTS

Tendency toward	Readiness for Pleasure (Eucholia)	Readiness for Pain (Dyscholia)
Excitement	Sanguine	Choleric
Tranquility	Phlegmatic	Melancholy

This table is a convenient way of arranging the temperaments and nothing more; while it furnishes a methodical approach it is in no way exhaustive. The temperaments are not only characterized by the hedonic and dynamic affective attributes but also by others not

¹ See pp. 535, 551, 552.

appearing in the table. Highly characteristic are the different *temporal* modes of action; for the sanguine and choleric temperaments there is usually more rapid oscillation, and for the other two types an affective perseverance.¹ Moreover, their relation to *acts of will* as direct or inhibited is of importance; on this account many psychologists have used the point of view of predominant activity or non-activity, of strong or weak reactivity, etc., in classifying types of temperament.

The temperaments manifest clearly delineated *physical* components; difference in tempo, amplitude, fluidity of movement, inclination toward slimness or stockiness, etc.² At bottom the temperaments are not at all pure mental qualities but psychophysically neutral delineations of the person in his totality.

The table must not be overvalued from the *diagnostic* point of view. In his *Anthropology* Kant maintained that the four temperaments amount to fixed *compartments* or classes into which all people may be put without ado. This is altogether improper. As in the case of all other typologies, there are numerous transitional and fluctuating forms; even within a given group there is no sort of uniformity among the individuals belonging to it.

The doctrine of temperaments is descended from antiquity; Galen reduced differences in human constitution to *physiological* causes, detailing various *mixtures*³ of the four elementary humors: blood, phlegm, yellow bile, and black bile. People in whom blood predominated were sanguine, those most affected by phlegm, phlegmatic, by yellow bile, choleric, and by black bile, melancholic. It has already been stated (p. 525) that such a doctrine of humors is revived in the modern theory of internal secretions and their psychological significance, although it is greatly altered.

Kant and many nineteenth century psychologists confined themselves to purely *psychological* derivations of differences in temperament, making use of the schematic intersection of simple attributes.⁴ Thus Kant's four temperaments took their departure from combinations of the distinctions affective and active, excitement and relaxation. Wundt coöordinated strong-weak with quick-slow emotional predisposition; Ebbinghaus, optimistic and pessimistic inclination with emotionalized and moody behavior.

Many attempts have also been made to extend the scheme by using more than two coöordinated pairs of attributes. Of such devices the arrangement of G. Heymans has been applied empirically, to be sure almost exclusively in his own investigations and in those of his pupils.

¹ In Heymans' doctrine of temperaments this distinction is described as between "primary function predominating," "secondary function predominating."

² Cf. p. 525.

³ The Latin *temperare* means to mix.

⁴ The most important schemes are brought together in my *Differentielle Psychologie*, p. 484.

He coördinates three pairs of attributes, emotional—non-emotional, active—non-active, predominant primary and secondary emotions. His scheme is as follows:

Emotional,	non-active, primary = "nervous"
Emotional,	non-active, secondary = "sentimental"
Non-emotional, active,	primary = "sanguine"
Non-emotional, active,	secondary = "phlegmatic"
Emotional, active,	primary = "choleric"
Emotional, active,	secondary = "impassioned"
(Non-emotional, non-active, primary = "amorphous")	
(Non-emotional, non-active, secondary = "apathetic")	

Heymans found no empirical evidence for the forms here put in parentheses.

2. INCLINATIONS AND INTERESTS

The permanent determinants of direction of human feeling are closely bound up with striving and action; they have therefore received some mention earlier.

Special treatment is nevertheless necessary. Actions are always salient, but the directedness of feeling is a permanent disposition which is at first consciously manifested as *inner preoccupation with the goal*, and which is only occasionally transformed into activity. Such dispositions occur in the two principal forms of *inclinations* and *interests*.

The word "interest" is used in two very different significations, as a term for an *immediate* or for a *protracted* tendency to approach a goal.

As an "acute" mental state, interest is closely related to attention. The two versions, "he listened with interest" and "he listened with attention" ascribe to the person a momentary concentration upon the object to be taken in; but "attention" expresses the dynamic tension and "interest" the concomitant affective participation. The following considerations are concerned solely with interest in the dispositional sense.

The fundamental difference between the two kinds of directional dispositions may be summed up in the statement that *inclination* is a "possessive" feeling, while *interest* is a quest in which feeling has a part.

An inclination is directed toward an existing concrete object as it actually *is*, an interest toward approaching a goal that is still indefinite. Inclination pertains more to reality, in a static way, and interest more to possibilities that must be developed, in a dynamic way. Hence the affective toning of an inclination is more immediate and more deeply embedded, that of an interest being more salient and more intel-

lectualized. The inclination seeks to bring its object as close as possible, and indeed, to annex it (to "introcept" it); in the case of interest, the object always remains somewhat remote and concealed; for it is "interesting" only so long as it imposes a task, sets a problem, etc., in short, is not achieved in its entirety.

Two examples follow.

(1) Affective attitude toward *people*. When one individual feels an inclination toward another, loving, respecting, and attaching himself to him, he takes him in as he is at present, without reservations. The image of the loved one, viewed as reality though shot through with feeling, is of an absolute kind. The effect of inclination upon this image is twofold; deeply entrenched essential features of the loved one become visible which remain hidden to the casual observer; but those features are suppressed which run counter to feeling. Love is clairvoyant as well as blind.

When on the other hand Individual A is "interested" in Individual B, he seeks his society in order to learn more about him; he is aroused by what is problematical in B. Meanwhile B need not have a "problematical nature" at all; frequently A's reaction to B is wholly individual because A feels that B *might* have significance for him. The "interest" is directed toward answering this question. If it is settled, inclination, aversion, or indifference takes the place of interest.

(2) Affective attitude toward *objects*. Elsewhere we employed the example of two friends walking in the country.¹ What was said of their behavior may be extended to their affective dispositions. One of them *loves* nature, seeking to bask in enjoyment of it and to become at one with it. The other has a strong *interest* in nature; he turns to it in order to fathom its mysteries, that he may decipher them more and more in an intellectual way. This interest, again, is closely connected with the questioning spirit and a problem consciousness, while inclination implies its own answer, often without any raising of questions.

We possess a special designation for the most intense degree of directional dispositions: *passion*. Both inclinations and interests may grow into passions. These play within the permanent structure of the person a part similar to that of emotions in acute inner experience;² they represent disturbances of equilibrium. The very word "passion" expresses the fact that the person is not master of himself but passively abandoned to one overwhelming experience and tendency. The many-sided and orderly meaningful direction of the person toward a goal is restricted through the persisting despotism of an affective attitude.

¹ See p. 472.

² See p. 551.

The directional dispositions of affective activity are either immediate or mediate in their nature. *Immediate* affective attitudes belong to the fundamental make-up of a person's nature. One person has a fundamental inclination toward music; another is imbued with a mathematical interest. When we call these tendencies "innate" it naturally does not mean that they were completely developed at birth and fixed in all details. Rather they undergo long-continued and varied development, and their organization and modes of activation are dependent to a great extent upon empirical influence. But they can mature only because there is an original urge. The question of causation involves phylogenetic considerations, and specific trends of feeling actually appear to be transmitted by heredity. But we cannot enter into a discussion of problems of heredity.

An inclination or interest is *mediate* when the affective attitude does not point originally to the object as such, but to other goals that are connected with it. Thus a pupil may have a greater inclination for gymnastics than for languages, not because of any predilection for disciplined bodily movement, but because he does not have to do any homework in gymnastics, or because he need not apply himself intellectually to it. In such a case his inclination is "mediate." In the course of time a mediate inclination may well turn into a direct one; the individual acquires a love for the object with which he originally concerned himself from other motives.

In the case of interests the distinction between the mediate and the immediate becomes still clearer. Because in their case it is a question of a gradual intellectual approach toward a goal which is at first but little embedded in the person, mediating motives play an extensive part. Interest in a certain class of objects may arise because of some special talent which inspires the hope of easy success, or because knowledge and skill of this order will be needed later in practical life, or because the teacher is attractive, or because the subject is "fashionable." There are countless motives of this sort which lie far afield and which may at times support or even replace immediate interests. But here too, as with inclination, the mediate interest may eventually become immediate. Many a person who was at first interested in chemistry solely because he wished to become a druggist has become more and more taken with the problems of chemistry as such, and has found complete gratification in working with them.

The permanence of affective attitudes towards objects varies greatly. There are fleeting and highly stable inclinations and interests; and finally there are those which attend the individual throughout his life and consequently acquire characterological significance as well. From genetic considerations, the maturing of trends of interest occurs very gradually. The small child names temporary interests solely.

In later childhood fixed spheres of interest are formed which may determine action over a long period (e.g., interest in building, in collecting, in playing with dolls). Puberty occasions another strong entrenchment and reorientation of interests; and only after this period of testing which frequently lasts a long time do those stable interest-attitudes usually arise which give their stamp to the activity of the adult.

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